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Yorkshire Naturalists' Union

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Yorkshire Naturalists' Union

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Front cover: Lunar Hornet Moth, a clearwing moth recorded in East Yorkshire in 2020 (see p195). *Photo*: Andy Nunn

Back cover: Joyce Payne (right) at a Brockadale YNU Excursion in 2010 with Nora Boyle, now President of Doncaster Naturalists' Society (see p235). *Photo*: Joyce Simmons

The Naturalist

The YNU, Covid-19 and 2021

During 2020 Covid-19 has not stopped people getting out and recording nature but it has had a profound effect on the ability of YNU members to meet up and share their experiences and expertise. The spring conference had to be cancelled, followed by the VC excursions, the various section meetings and, of course, the AGM. Notwithstanding good news on vaccines, Covid-19 does look likely to impact on YNU activities into 2021. Consequently, the YNU Executive wanted to highlight alternative ways, other than face-to-face, in which members and affiliated societies could share their observations and ideas and generally keep in touch with each other.

The YNU already has Facebook (https://www.facebook.com/groups/ynu.org) and Twitter accounts (https://twitter.com/ynuorg/) to which people can post text, photos and videos. There are some regular YNU contributors to either or both. It's well recognised that not everyone wants to use Facebook or Twitter but, if you have natural history news or photos that you'd like to share with other members of the YNU, our social media co-ordinator, Francis Hickenbottom, is very happy to post it for you. Email any text and/or photos to fhickenbottom@aol.com. We are not interested only in rarities or special finds. People do like to see pictures of seasonal things, especially at a time when their ability to get out and about might be restricted. The YNU Facebook and Twitter postings can be viewed by the wider public and species which might be very familiar to experienced natural historians might be new and interesting for potential members so activity in these social media will all help to raise the profile of the YNU.

Since the start of the Covid-19 crisis many families and organisations have discovered the potential of computer applications like Zoom and Microsoft Teams to meet virtually and converse in real time, probably the next best thing to meeting face-to-face, providing the technology holds up! These applications also have the advantage of screen-sharing so that documents, images and PowerPoint presentations can be shared. Both the YNU Executive and *Naturalist* Editorial Board have used Zoom successfully for meetings that were originally scheduled for face-to-face.

Following on from this, to try and maintain effective contact between YNU members, both individuals and affiliated societies, the Executive has established an initial programme of virtual YNU meetings for the early part of 2021. They are detailed on the Calendar (p240) and will

be advertised on the website and Facebook/Twitter. As you'll see the focus of these meetings varies and suggestions for future meetings on subjects like species identification, particular locations and their habitats or anything else you think YNU members would be interested in, would be welcome. We'd especially like contributions from affiliated societies to tell us about themselves and their activities. Please email any member of the Executive with ideas that you might have for such a session. We look forward to hearing from you!

Andy Millard

Michael Clegg's Yorkshire House Mice: A tale of tails

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Introduction

Since the original Linnean classification of the familiar House Mouse as *Mus musculus* in 1758, Marshall & Sage (1981) have combined classical morphological techniques with electrophoretic studies of enzymes and proteins to show that at least seven species are incorporated within the original *M. musculus*. Four of these, *M. musculus*, *M. domesticus, M. spretus and M. abbotti* occur in Europe (Berry, 1981). *M. domesticus* Rutty 1772 is the form which occurs in the British Isles and extends from adjacent parts of Western Europe to the Near East via the Balkans, Greece and Turkey. It is the most widely distributed form, which could be due either to its innate characteristics or merely to the historical accident of its association with Neolithic man in cereal-growing sites in the Near East, *M. domesticus* being spread by human cultures via the expansion of cereal cultivation and consumption (Berry, 1981).

Evidence of its early occurrence in the Yorkshire region dates from the period of the Roman occupation, archaeologists finding *Mus* skeletal material from sites in Roman Doncaster (Yalden, 1999) and in York. Finds date from the late 2nd to mid 3rd centuries in Tanners Row; the 8th century in Fishergate; the late 9th century in Coppergate; the 13th and 14th centuries again in Fishergate; and the 15th to 18th centuries in Coffee Yard (O'Connor, 1992).

Studies of modern *Mus domesticus* populations in Yorkshire are largely attributable to the pioneering work of Michael (Mike) Clegg (1933-1995) who, during his working life, was one of the most active recorders and researchers of the county's mammal fauna, though with a particular interest in House Mice (Moore, 2015), one of his obituary notices being entitled 'The man who loved mice' (Wainwright, 1995).

As a pest species the House Mouse was universally trapped in domestic, commercial and agricultural premises using the ubiquitous 'Little Nipper' break-back mouse traps. Culled specimens were therefore readily available for biological examination and to provide material on which techniques of small mammal taxidermy could be learned; indeed Mike taught generations of aspiring naturalists how to prepare House Mice as museum cabinet skins. However, his interest was largely focussed on sampling populations in a range of contrasting habitats. This led to trapping projects around Sheffield (Clegg, 1963a), on coastal sand dunes at Spurn (Clegg, 1963b & 1965c), at Gibraltar Point Field Centre and in six collieries within

the South Yorkshire coalfield (Clegg, 1965a, b & d.). Sadly, the Gibraltar Point project came to naught as the *M. domesticus* population, though formerly present, succumbed to a "general increase in hygiene" and had not recolonised by 1968 (Clegg, 1969). In addition to this legacy of published papers, a series of cabinet skins and skulls was deposited for further research in the collections in Doncaster Museum and Art Gallery, Sheffield City Museum and the Yorkshire Museum (see acknowledgements).

The following study, resulting from a recent enquiry from Doncaster Museum, reviews this work and re-examines aspects of the museum specimens in the light of more recent laboratory and field research outlined by Berry (1970 & 1981).

Spurn House Mice

Being a regular visitor to Spurn peninsula, Mike became involved with monitoring its terrestrial mammal fauna. In a BBC Radio 4 broadcast he recounted that when applying for permission to trap mice at the observatory, his request had to go before the rather formidable Ralph Chislett, chairman of the Bird Observatory Committee. The terse discussion went:
Chislett "Well how many mice do you need to trap?"
Clegg "Oh … err … about as many as two short-eared owls would take in a week".
Chislett "Well, make it one owl."

In fact, the cold winters of 1961 to 1963 drove influxes of mice into the observatory, some of which were trapped by Peter Mountford, the observatory warden. Of thirty-seven specimens examined, fourteen were preserved as study skins (Clegg, 1963b) and one of these is preserved in Sheffield City Museum (Acc. No. 1961.63) where Mike worked as Natural History Assistant from 1959 to 1963, and eleven in the Yorkshire Museum collection (Acc. No. 2019.270-280) where he worked as Director from 1974 to 1982.

A characteristic feature of the Spurn specimens was the colouration of their pelage, described by Mike as "lighter in colour" than any of *c.*200 House Mice he had caught elsewhere in Yorkshire. "On their dorsal surfaces they were light, sandy-brown, grizzled to a certain extent with darker brown" (Clegg, 1963b). "Below they ranged from sandy-buff to a creamy straw shade and lacked any of the greyness normally found in the house mouse" (Clegg, 1965c). This peculiarity he likened to another sand dune population at North Bull Island, Dublin Bay where Jameson (1898) speculated that the sandy colouration of the local population may be an example of selection for crypsis by predatory birds, though this enticing Darwinian Theory was doubted by Berry (1981). Coastal populations on the Isle of May and on Fair Isle were also reportedly "light and tawny in colour" (Barrett-Hamilton, 1910-21).

South Yorkshire Colliery mice

Populations of House Mice had been documented living in collieries at depths of 750ft at Niddrie, Midlothian in 1914 (Ritchie, 1914) and at 1,800ft in the Barony Colliery, Auchinleck, Ayrshire in the 1930s (Elton, 1936) thus Mike, who had contacts in the coal industry, was keen to investigate the prospect of mice living underground in his native Yorkshire.

The study of Yorkshire colliery mice commenced in 1960 with National Coal Board (NCB) personnel providing specimens from mines at Barrow and Monk Bretton; however the majority

of the work was undertaken in 1964 and 1965 when Mike worked as Keeper of Natural Sciences at Doncaster Museum. NCB medical staff members were periodically in touch with Doncaster Museum regarding the identification of invertebrate 'pests' affecting miners in collieries across the Yorkshire coalfield (see Howes & Limbert, 2010). Inflamed insect bites, notably around ankles and waist bands, were evidently the result of flea bites, but at the time the source of these pests was a mystery. Mike was granted permission to place mammal traps in the underground stalls of pit ponies in the problem collieries from February 1964 to May 1965, (see Table 1). These quickly caught a series of House Mice.

Table 1: Names and locations of South Yorkshire collieries showing numbers of mice caught, date ranges, depths and temperatures at trap sites.

Colliery	Location	Depth of stables ft	Temp. range °C	Date range	Males	Females
Allerton Bywater	Castleford	700	18.3	5.3 to 9.3.1964	13	15
Barrow	Barnsley	?	?	30.11 to 6.12.1960	5	14
Glasshoughton	Pontefract	750	18.3 to 23.8	23.3 to 13.5.1964	10	3
Hemsworth	Hemsworth	2200	18.3	17.3. to 14.5.1965	5	5
Monk Bretton	Barnsley	1510	15.5	21.12.1960	3	2
Monkton No.3	Hemsworth	1510	15.5	17.3. to 14.5.1964	22	21

How the mice had entered the mines in the first place and how their thriving populations were able to sustain themselves was revealed as accidental introduction in supplies of hay bedding and cereal fodder for the ponies. Supplementary food was also provided by miners sharing their 'snap' with their free-range 'pets'. Fleas from mouse nests in the pony stalls had evidently been causing the inflamed irritation affecting the miners. The only specimen actually secured for identification was *Nosophyllus londinensis* (Rothschild) (see Clegg, 1965a & d). At the time Clegg (1965a) had found the head and body measurements for the colliery mice to be greater than the national mean, that figure being calculated from 40 specimens from Reigate, Surrey caught and measured by L.E.Adams (Barrett-Hamilton, 1910-21). However, populations of even larger mice have since been monitored in mainland sites in Pembrokeshire, Taunton, Fife and the islands of Skokholm, May and Foula (see Berry, 1970; 1981 and table 2, p165).

The study revealed that the tail tips of some (7%) of the underground mice exhibited whitening referred to as albinism. This latter feature was thought to be due to the physical effects of nestling mice holding onto each other's tails (caravanning) in the pitch dark conditions (Clegg, 1965a and b).

Anecdotally it seemed that mouse populations died out during extended periods when ponies were removed from the underground stalls and the food was not being renewed. Also it seemed

that mouse populations were wiped out if Brown Rats *Rattus norvegicus* were inadvertently introduced. This had occurred when mouse-occupied mine workings broke through into adjacent workings occupied by rats.

Table 2: Mean and ranges of head & body and tail lengths of adult House Mice sampled from Spurn, East Yorkshire and South Yorkshire Collieries; also from mainland and island sites across the United Kingdom.
Sources: 1= Barrett-Hamilton (1910-21); 2= (Berry (1964) and Batten & Berry (1967); 3= Berry & Jakobson (1975); 4= Berry (1964); 5= Berry (1970)

Location & source	**Males**			**Females**			**Males & Females amalgamated**		
	No.	Head & body (mm)	Tail (mm)	No.	Head & body (mm)	Tail (mm)	No.	Head & body (mm)	Tail (mm)
Spurn, E. Yorks (this study)	7	76.5	70	5	77.2	75.2	12	76.8	72.1
	Range	72-85	56-83		54-80	59-82		72-85	56-83
S.Yorks Collieries (this study)	58	85.5	81.4	46	86.6	82.9	104	85.6	82.2
	Range	71-100	67-92		70-104	67-96		70-104	67-96
Reigate, Surrey (1)	20	78.5	77.1	20	77.6	77.5	40	78.1	77.3
Pembrokeshire, (2)	113	88.8	74.8	135	92.1	76.9	248	90.45	75.85
Taunton (3)	-	-	-	-	-	-	104	86.6	74.3
Fife, Scotland (4)	68	85.9	73.3	102	88.7	75.1	170	87.3	74.2
Island Populations									
Skokholm (2)	69	89.6	84.8	56	91.6	85.1	128	90.6	84.95
Isle of May (5)	43	88.1	71.5	44	88.9	73.3	87	88.5	72.4
Orkney (4)	-	-	-	-	-	-	331	75.5	72.6
Foula, Shetland (4)	24	97.1	81.2	31	98.3	83.7	55	97.7	82.45

Progress in biometric research

Due to a range of laboratory and field studies reviewed by Berry (1970; 1981), additional interpretations of measurements of museum specimens have become possible.

In experimentally rearing generations of House Mice in 'control-reared' and 'heat-reared' conditions Harrison (1958) found that the most striking morphological difference was in mean tail length, the greater tail lengths expressed in the heat-reared cohorts. From this he speculated that the tail could be a key to the mouse's thermoregulation capacity, a richly vascular but fur-less tail functioning as a radiator to disburse heat. In further heat tolerance experiments using various classes of inbred (laboratory) mice, Harrison *et al.* (1959) and Barnett (1965) found that absolute tail lengths were lower in populations bred at -3°C than those at 21°C. However, in some genetic classes, body length remained the same in the two temperature regimes, indicating that the effect of temperature on tail length was independent of its effect on body length. Additional to these external physical manifestations of temperature management, Berry & Jakobson (1975) showed that temperature tolerance in mice was also managed through

metabolic means, with cold-stressed populations increasing the oxygen carrying capacity of their blood and accumulating deposits of brown fat to be metabolised for heat production.

Results and discussion: For comparative purposes, mean head and body and tail length data have been gathered from studies at mainland and island sites across the United Kingdom (see Table 2, p165).

Possible descending south to north size clines

Berry (1970; 1981) showed that principles revealed by laboratory experiments (Harrison, 1958*;* Harrison *et al.,* 1959; Barnett, 1965) were borne out in the field, noting that mean tail length expressed as a percentage of mean head and body length in wild-caught House Mouse populations decreased from the warmer lower latitudes to the colder higher latitudes, giving rise to a descending south/north size cline. Data gathered for this review (see Figure 1) show that Berry's hypothesis is borne out by the central/eastern mainland sites of Reigate (R) 98.9%, Spurn (S) 93.9% and Fife (F) 84.9%.

According to the estimated trend line in Figure 1, the tail as a percentage of head and body length for the South Yorkshire colliery (SYC) mice should be in the order of 94.2% if living as a surface dwelling out-door population, however the elevated figure of 95.9% probably results from living in the enhanced temperatures of geothermally heated conditions.

The far western sites of Taunton (T) 85.8% and the west coast of Pembrokeshire (P) 83.8% possibly accord with a south/north size trend if considered as representing a separate, Atlantic-influenced climatic zone (see Figure 1). Mouse populations colonising the off-shore islands of Skokholm (93.7%), the Isle of May (81.8%), Orkney (96.2%) and Shetland (84.4%) - not shown in Figure 1, do not support a simple north/south cline and appear to be controlled by different environmental and evolutionary factors discussed by Berry (1964).

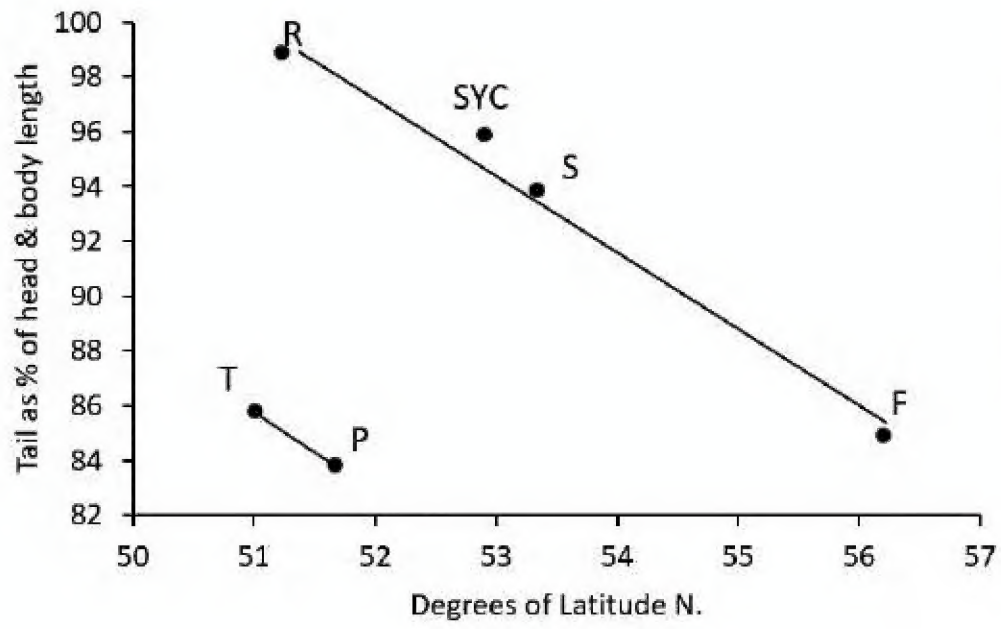

Figure 1: Mean tail length as a percentage of mean head and body length of House Mouse populations in central/eastern mainland Britain and western mainland Britain plotted against degrees of latitude indicating possible south to north size clines.

Females larger than males

A re-examination of museum cabinet skins showed that mean head and body (H&B) and mean tail (T) measurements were marginally greater in females than males in samples from both Spurn (H&B by 0.7mm (0.9%) and T by 5.2mm (6.9%)) and the South Yorkshire colliery (H&B by 0.4mm (0.5%) and T by 1.5mm (1.8%)). Data in Table 2, p165 show that this is generally the

case with mean female head and body measurements being larger by 0.5% to 3.6% and female tail measurements being larger by 0.4% to 6.9%.

Tail length and temperature

Using the Spurn sample as a proxy for 'cold store' mice and the colliery samples as a proxy for hot climate mice living where unfluctuating temperatures remain at 15.55°C to 23.8°C even during hard winters, Table 2, p165 shows that the mean tail lengths (both sexes) from the Spurn sample was 72.1mm, compared with 82.2mm from the colliery samples (see Figure 2). This shows the tails of the Spurn population to be 10.1mm (12.3%) shorter, thus according with the thermo-regulation principles of short tails equating with heat conservation and long tails assisting heat dispersal (see Berry, 1970; 1981); indeed the colliery mice, living in geothermally heated conditions, had longer tails than any other free-living UK mainland populations (see Table 2).

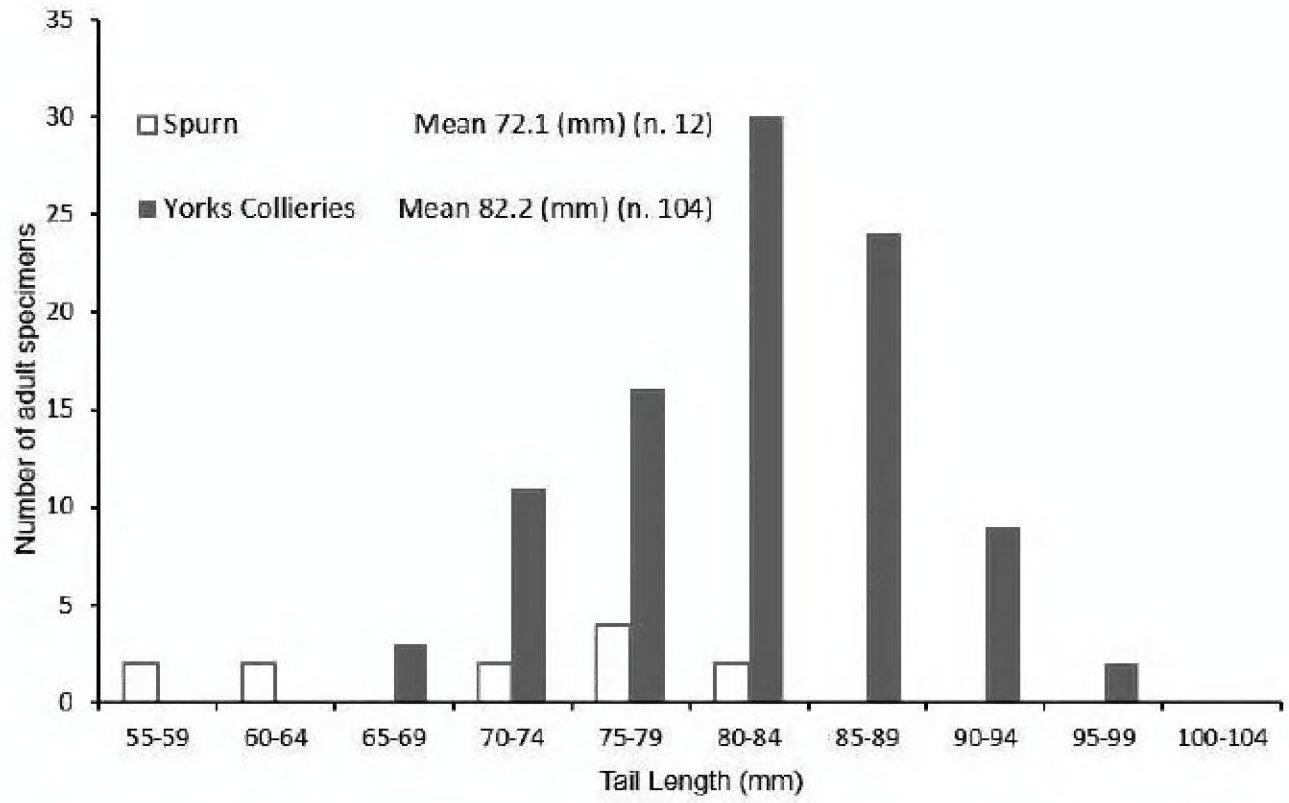

Figure 2: Tail lengths of House Mouse populations sampled by T.M.Clegg from Spurn, East Yorkshire and six South Yorkshire Collieries.

As a final coda: If they were from the South Yorkshire Coalfield, the 'Three blind mice' of the 1609 nursery rhyme (Baring-Gould & Baring-Gould, 1962) that suffered enforced tail-docking at the hands of an incensed carving knife-brandishing farmer's wife, would have had their thermoregulation capacity severely impaired!

Acknowledgements

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sister's school (Scarborough Girls High School). The winning entry was a pair of rather smart black and white (fancy) House Mice which were for sale and which I proudly took home.

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Tree colonisation of upland grassland in the Peak District following exclusion of livestock

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Introduction

The gritstone uplands of the Peak District are characterized by siliceous acid grassland, upland heath, and blanket bog. Woodland is relatively scarce and much of it is plantation. However, some fragments of native woodland, dominated by Sessile Oak *Quercus petraea*, have survived. This type of woodland in the Peak District was described by Moss (1913). Oak largely fails to regenerate and Anderson & Shimwell (1981) noted that some of the woods recorded by Moss no longer merited being regarded as woodland. An example of a Peak District Sessile Oak woodland, well known to botanists, is Yarncliff Wood which lies in the valley of Burbage Brook and is part of the National Trust's Longshaw Estate. This wood was studied extensively from the 1950s to the 1980s by Pigott (1983).

Figure 1. Non-regenerating, relict, Sessile Oak woodland, amidst gritstone boulders below Burbage Rocks, c.120-150m north of the Upper Burbage Valley enclosure, November 2016.

Figure 2. The northern boundary of the enclosure in November 2015, the year in which it was installed. The ground flora, here chiefly Wavy Hair-grass and Bracken, appears similar on both sides of the fence. The enclosed area is on the right.

Beyond Yarncliff Wood the Burbage Valley extends upstream, roughly northwards, for c.1.3km to Burbage Bridge (SK261807) and then for a further c.2.3km to Upper Burbage Bridge at an altitude of c.400m, beyond which is the plateau occupied by Ringinglow Bog (Goulder, 2015). The vegetation between Burbage Bridge and Upper Burbage Bridge is largely acid grassland and upland heath although there is some coniferous plantation which has recently (since c.2014) seen extensive felling. There are also occasional scattered trees amongst boulders and in gullies. On the eastern side of the valley, immediately below the sheer gritstone edge of Burbage Rocks, there survives a narrow strip of Sessile Oak woodland (Figure 1). This extends approximately northwards for c.340m from SK26868219, has a width at most of c.35m, and

an area of c.0.80ha (data from online OS maps at Edina Digimap). The oak trees are amongst gritstone boulders on sloping ground and are old and gnarled, often with dead branches – no young oaks were seen in November 2016. There were a few scattered Rowan *Sorbus aucuparia*, Silver Birch *Betula pendula*, Downy Birch *B. pubescens* and, clinging to the face of the gritstone edge, Holly *Ilex aquifolium*. The boulders tended to be bryophyte clad, there was much leaf litter, and the most abundant vascular plants in the ground flora were Bilberry *Vaccinium myrtillus*, Wavy Hair-grass *Avenella flexuosa* (=*Deschampsia flexuosa*), Heath Bedstraw *Galium saxatile*, and Bramble *Rubus fruticosus* agg. Nomenclature of vascular plants follows Stace (2019). Sheep wool snagged on tree bases showed that sheep used this wood.

The Sheffield Country Walk runs up the valley, and in February 2015 I observed that between the path and the foot of Burbage Rocks, c.120-150m south of the relict woodland, a post and wire enclosure was under construction. Signage indicated an area just over 1ha was to be enclosed, that the work was being undertaken by the National Trust on behalf of Sheffield City Council, and that its aim was to exclude sheep and cattle and allow regeneration of trees. The enclosure had been completed when I visited on 23 April 2015. Its shape is a rough oblong, max. length c.225m and max. width c.70m. Its length lies N-S beneath the gritstone edge of Burbage Rocks, and its width slopes downwards east to west from below the gritstone edge towards the track that forms the Country Walk. The north-west corner is at SK26798208 (altitude c.390m). There are scattered gritstone boulders. The fence is constructed of round wooden posts at 2-2.5m intervals, with (15cm x 15cm) wire mesh between, and topped by two strands of barbed wire, total height c.1.2m (Figure 2, p169).

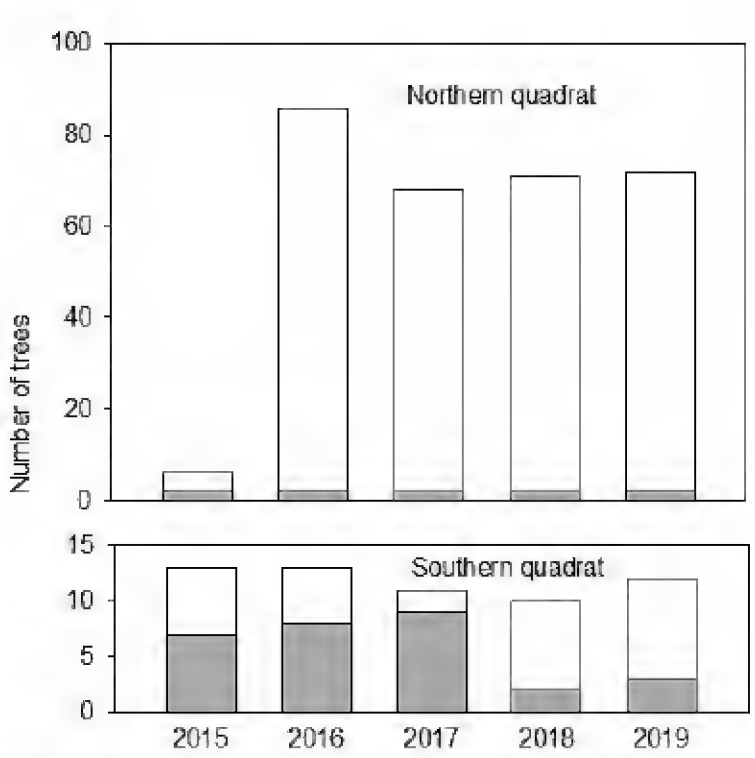
By April 2015 saplings had been planted within the enclosure. These were up to c.1.5m height, with stakes and rabbit guards and included Rowan, Downy Birch and Sessile Oak. The ground flora was a mosaic of grassland (with conspicuous Wavy Hair-grass), ericaceous shrubs (Heather *Calluna vulgaris*, Crowberry *Empetrum nigrum*, Bilberry and Cowberry *Vaccinium vitis-idaea*), and Bracken *Pteridium aquilinum*.

Trees within the enclosure

Trees were recorded in two circular quadrats (radius 10m, area 314m^2) within the enclosure, and in two control quadrats in the area between the north end of the enclosure and the relict woodland. Trees were identified and counted in eight marked-out 'pie slices' in each quadrat. Recording was annually, in September-November, from 2015 to 2019. One quadrat was in the northern half of the enclosure, centred at SK2683782058, and one in the southern half, centred at SK2682481883. The centres of the quadrats were c.175m apart. The control quadrats, outside of the enclosure, were centred at SK2680982094 and SK2679982129. The handheld GPS used (Garmin eTrex H, High Sensitivity Personal Navigator) claims accuracy to at best c.3m, hence the quadrat centres are liable to have wandered a little between successive years. All trees, seedlings and saplings, were recorded. Note was taken of height (<1m, 1-2m, or >2m) and whether they were self-seeded or planted (i.e., with guards and stakes). Downy Birch and Silver Birch were not always easy to separate in the field; hence they were recorded in a single category.

I gained a general impression that scattered trees within the enclosure, including planted ones, became more conspicuous between 2015 and 2019. This is supported by the more objective data from the quadrats (Figures 3-5). In November 2015, towards the end of the year in which

the enclosure was set up, the northern quadrat held six trees within its 314m^2 area: four self-seeded Rowan(height <1m); one planted Rowan (height 1-2m), and one planted Sessile Oak (height <1m). By October 2016, trees, largely seedlings, were much more abundant in the northern quadrat, with 86 trees being recorded. 84 of them appeared to be self-seeded. These were 37 seedlings of Sessile Oak, 24 Rowan (plus four of 1-2m height), 15 Birch, two Hawthorn *Crataegus monogyna*, and two Holly. The two planted trees were still there. In the following years, 2017-2019, the number of trees recorded in the northern quadrat was largely stable, at 68-72 (Figure 3); there was not a continuing increase beyond the initial surge in 2016. The two planted trees survived. The height of trees in the northern quadrat increased modestly; in 2016 only six trees were >1m in height, which increased to 14-22 trees in 2017-2019 (Figure 4). None exceeded 2m. Sessile Oak and Rowan continued to be most numerous, followed by Birch and Hawthorn and Holly (Figure 5).



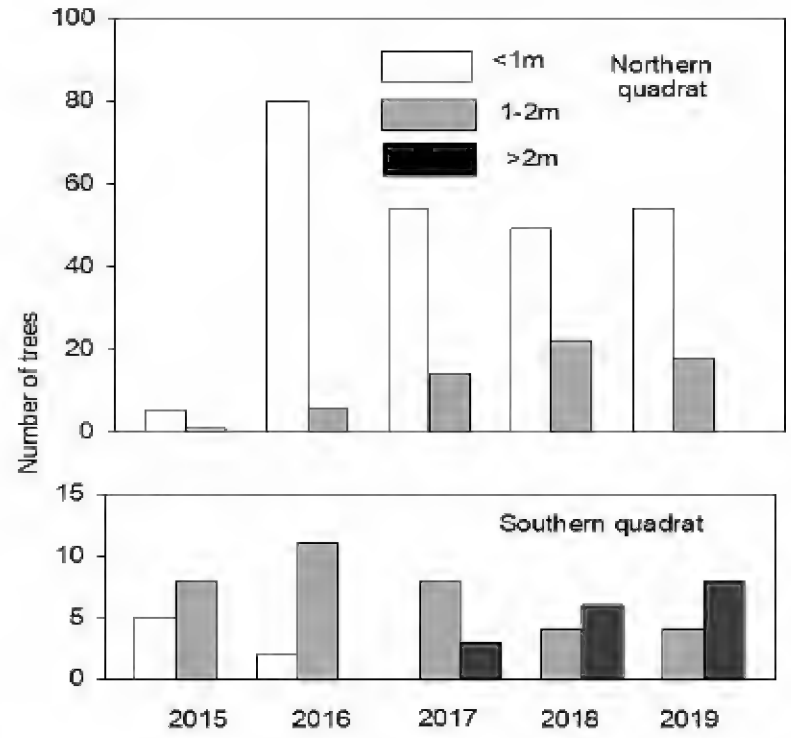


Figure 3 (*top left*). Total number of trees in circular quadrats (area 314m^2) in the Upper Burbage Valley enclosure, 2015-2019. Infill indicates trees that had obviously been planted. Note the different vertical scales.

Figure 4 (*top right*). The number of trees in each height category in circular quadrats (area 314m^2) in the Upper Burbage Valley enclosure, 2015-2019. Note the different vertical scales.

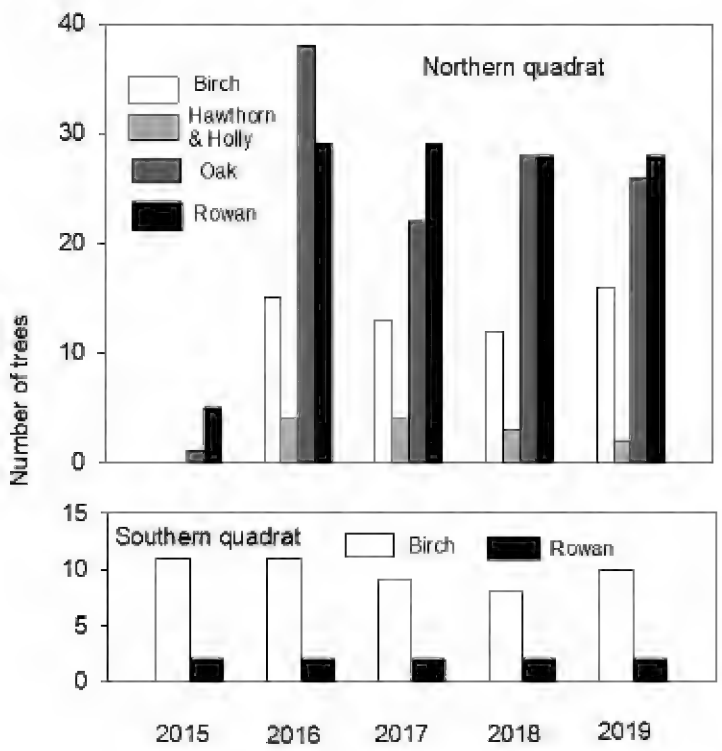


Figure 5 (*left*). The number of trees in each taxonomic category in circular quadrats (area 314m^2) in the Upper Burbage Valley enclosure, 2015-2019. Note the different vertical scales.

Tree records in the southern quadrat were markedly different (Figures 3-5, p171) and notably fewer trees were found than in the northern quadrat. The surge in seedling numbers, observed in the northern quadrat in 2016, was not seen in the southern one. In 2015, of 13 trees recorded in the southern quadrat, seven were Birch that had obviously been planted; two of these were <1m in height, the others were 1-2m. There were also four self-seeded Birch, three of which were 1-2m high, and two self-seeded Rowan (both <1m high). In the following year (2016), 13 trees were again recorded. These were 8 planted Birch (all 1-2 m high), three self-seeded Birch (1-2m high), and two self-seeded Rowan (<1m high). The number of trees remained largely stable over 2017-2019 (Figure 3). The decrease in the proportion of obviously planted trees was probably caused by deterioration and loss of guards and stakes. Minor year to year anomalies were probably caused by small shifts in the location of the quadrat centre – peripheral trees could move in and out of the recorded area. The trees in the southern quadrat increased notably in height. By 2017 there were no trees <1m high, and trees >2m high (all Birch) began to be recorded (Figure 4). Birch was more numerous throughout the study period and the ratio of Birch to Rowan remained constant (Figure 5).

Far fewer trees were recorded in the two control quadrats. These were seedlings, generally of height <20cm, some bitten down. The combined number of seedlings recorded in the two control quadrats were one Hawthorn in 2015, six Rowan in 2016, one Rowan in 2017, two Rowan in 2018, and one Rowan in 2019. Clearly seedlings in the control area quickly succumbed to grazing.

Figure 6. The western boundary of the enclosure in October 2018, c.3.5 years after installation. The ground flora of largely Wavy Hair-grass and Bracken is clearly more luxuriant inside the enclosure.

Figure 7. A planted Sessile Oak (with rabbit guard and stake) inside the enclosure in August 2019, c.4.5 years after enclosure. Browsing, possibly by deer, appears to have limited the height of the tree.

Ground flora within the enclosure

The sloping valley side on which the enclosure is sited can be loosely described as siliceous upland grassland with dominant Wavy Hair-grass. The vegetation is, however, patchy with substantial areas dominated by Bracken, Heather and Bilberry. By October 2016 and subsequently it had become obvious, from the ground flora, that there was less grazing inside the enclosure. Wavy Hair-grass was taller and more conspicuous than outside the fence on the north and west sides

of the enclosure (Figure 6).

The ground flora in the enclosure, and in the control area outside, was recorded annually in September-November from 2015 to 2019. Three areas were recorded separately: (1) the northern half of the enclosure, (2) the southern half of the enclosure, and (3) the control area, c.70m x c.100m, immediately north of the enclosure. I recorded herbs, ericaceous shrubs, and the more conspicuous mosses while I walked about 'randomly' for 1 hour in each area. The abundance of plants was estimated subjectively using the DAFOR scale (dominant, abundant, frequent, occasional, rare) – (e.g. Kent, 2012). To avoid subconscious bias the results from previous years were not consulted before recording.

Along with plants that were at times recorded as dominant (Wavy Hair-grass, Bracken, Heather, and Bilberry) were others that sometimes achieved the status of abundant (Heath Bedstraw *Galium saxatile* and Sheep's Sorrel *Rumex acetosella*) or frequent (Common Bent *Agrostis capillaris*, Rosebay Willowherb *Chamerion angustifolium*, Crowberry *Empetrum nigrum*, Sheep's Fescue, *Festuca ovina* agg., and Cowberry). Plants recorded are listed in Table 1. Some of the plants found may be associated with the disturbance, and possibly carriage of seeds, during construction of the enclosure, i.e., Common Mouse-ear *Cerastium fontanum*, Rosebay Willowherb, Smooth Sowthistle *Sonchus oleraceus*, and Common Nettle *Urtica dioica*. Scores for the more conspicuous mosses are also included in Table 1. None of these were ever recorded as dominant, although Neat Feather-moss *Pseudoscleropodium purum* reached abundant status, while several others were sometimes frequent. Mosses showed much year to year variation which may be because they are less obvious during dry spells. Nomenclature of mosses follows Atherton, Bosanquet & Lawley (2010).

Table 1. Abundance of ground flora in the Upper Burbage Valley enclosure and the control area over 2015-2019

	Northern half of the enclosure	**Southern half of the enclosure**	**Control area (0-100m north of the enclosure)**
Vascular plants			
Agrostis capillaris Common Bent	O-F	O-F	O-F
Avenella flexuosa Wavy Hair-grass	D	A-D	D
Calluna vulgaris Heather	O-F	A-D	F-D
Cerastium fontanum Common Mouse-ear	X-R	X-R	X
Chamerion angustifolium Rosebay Willowherb	O	O-F	X-O
Digitalis purpurea Foxglove	X	X-R	X-O
Empetrum nigrum Crowberry	F	O-F	F
Festuca ovina agg. Sheep's-fescue	O-F	O-F	O-F
Galium saxatile Heath Bedstraw	F	F-A	O-A
Holcus mollis Creeping Soft-grass	X-O	X-O	X
Juncus effusus Soft rush	O	R-O	O
Juncus squarrosus Heath Rush	X	X	X-O
Nardus stricta Mat-grass	X-O	X-R	O
Oxalis acetosella Wood-sorrel	X	X-O	X
Potentilla erecta Tormentil	X-R	X-R	R-O

Pteridium aquilinum Bracken	A-D	A-D	D
Rubus fruticosus agg. Bramble	X-O	X-O	X-O
Rumex acetosella Sheep's Sorrel	O-A	F-A	F-A
Sonchus oleraceus Smooth Sowthistle	X-R	X	X
Urtica dioica Common Nettle	X	X-R	X
Vaccinium myrtillus Bilberry	F-A	A-D	F-D
Vaccinium vitis-idaea Cowberry	O-F	O-F	X
Conspicuous bryophytes			
Dicranum scoparium Broom Fork-moss	O-F	O-F	O-F
Hylocomium splendens Glittering wood-moss	X	X	X-O
Hypnum jutlandicum Heath Plait-moss	O	X-O	O-F
Pleurozium schreberi Red-stemmed Feather-moss	X-O	X-O	O-F
Pseudoscleropodium purum Neat Feather-moss	X-F	O-F	O-A
Polytrichum commune Common Haircap/ *Polytrichastrum formosum* Bank Haircap	X-O	R-O	R-F
Rhytidiadelphus sqarrosus Springy Turf-moss	O-F	X-O	X-O

Plants were recorded each year over 2015-2019 and the range of the scores is given: X=not recorded; R=rare; O=occasional; F=frequent; A=abundant; D (with infill)=dominant.

De-trended correspondence analysis (DCA) (Kent, 2012) was used to compare the vegetation of the three areas over the five sampling years. This multivariate method compared vegetation using the plants found (Table 1) and their abundance scores. The Community Analysis Package was used (Henderson & Seaby, 2008) with default settings. DAFOR scores were first converted to numerical values (D&A=3, F=2, O&R=1). Bryophytes were not included in the analysis. Each of the 15 points on the ordination plot (Figure 8) refers to one of the three sample areas in one year.

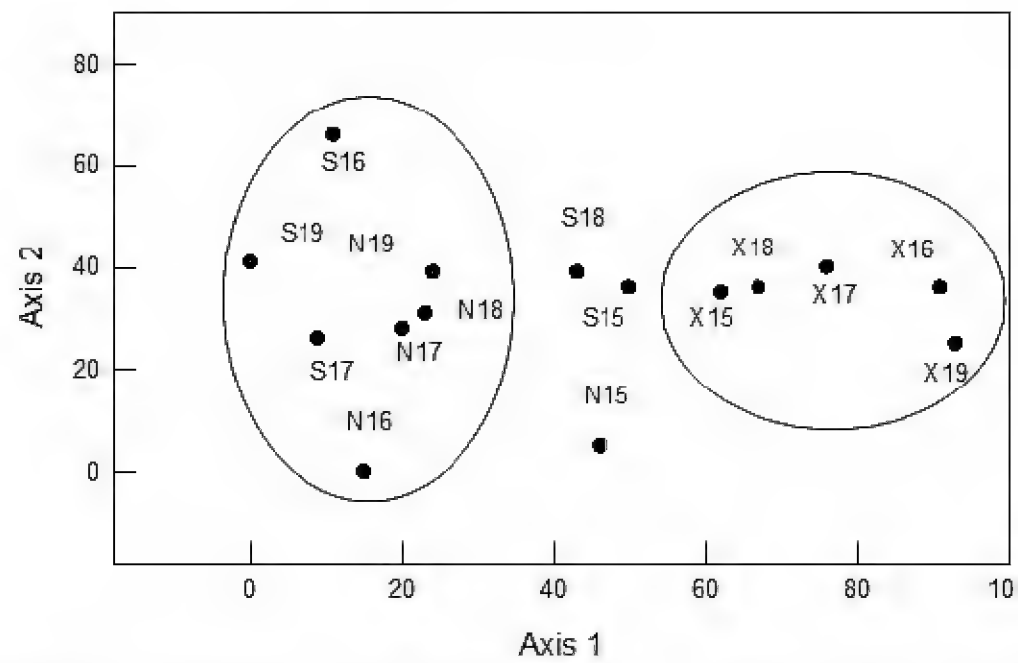


Figure 8. Ordination plot for ground flora in the Upper Burbage Valley enclosure and in the control area outside the enclosure. N15-N19 represent the northern half of the enclosure in 2015-2019, S15-19 represent the southern half of the enclosure in 2015-2019, and X15-19 represent the control area in 2015-2019. Points that are closer together have greater similarity of ground flora.

The closer the points are, the more similar is the vegetation that they represent. The cluster to the left of the plot indicates that the vegetation over 2016-19 was similar in both the north

and south halves of the enclosure (apart from S18, i.e., the southern half in 2018, which was anomalous). The cluster to the right indicates relative similarity within the control area. It is notable, however, that in 2015, the year that the enclosure was installed, the points representing vegetation in both the north and south halves of the enclosure (N15 & S15) are close together and are well separated from those representing the vegetation in the enclosure in later years (apart from the anomalous S18). Furthermore, point X15 which represents the control area in the first year (2015), is the closest of the control area points to N15 and S15. This evidence suggests that the vegetation in the enclosure has diverged from that in the control area and agrees with my visual observation that by 2016 the sward within the enclosure had changed. Notably it had become taller. DCA also gives a species plot; this suggested that plants more associated with the enclosure cluster included Cowberry, Wood Sorrel *Oxalis acetosella*, Creeping Soft-grass *Holcus mollis*, Common Mouse-ear, and Rosebay Willowherb. Those more associated with the control area cluster included Mat-grass *Nardus stricta*, Heath Rush *Juncus sqarrosus*, Foxglove *Digitalis purpurea*, and Tormentil *Potentilla erecta*.

Trees in the neighbourhood

Self-seeded trees in the enclosure are likely to have arisen from seed produced in the neighbourhood and dispersed locally by wind, birds, or small mammals. To find out which seeds are likely to be produced locally, the area within 500m of the enclosure was searched for trees in November 2016. They were sparse, generally scattered and few species were found. Some (conifers) were associated with plantations. Six of the ten trees recorded were components of the patch of relict oak woodland close to the north end of the enclosure (Table 2).

Table 2. Trees in the Upper Burbage Valley within 500m of the enclosure.

Betula pendula Silver Birch*	*Pinus contorta* Lodgepole Pine
Betula pubescens Downy Birch*	*Quercus petraea* Sessile Oak*
Crataegus monogyna Hawthorn	*Salix cinerea* Grey Willow
Ilex aquifolium Holly*	*Sorbus aucuparia* Rowan*
Larix decidua European Larch	*Ulex europaeus* Gorse*

Additionally, *Pinus sylvestris* Scots Pine was found between 500m and 1km of the enclosure.
*Found in the relict Sessile Oak woodland to the north of the enclosure

Discussion

Trees, albeit scattered, became a visually more conspicuous feature of the Upper Burbage Valley enclosure over the four years after it was set up in early 2015. Furthermore, quantitative records from quadrats showed a marked increase in the importance of trees; their numbers increased substantially in the quadrat sited in the northern half of the enclosure (Figure 3, p171) while they increased in height in both quadrats, most notably so in the southern one (Figure 4, p171). Planted saplings, with their rabbit guards and stakes, were a feature throughout the enclosure. Native Sessile Oak, Birch and Rowan were used, and most have survived although a few dead ones were seen. Most of the tree seedlings and saplings found in the enclosure were, however, self-seeded. Frequent amongst these were Sessile Oak, Rowan, Birch, Hawthorn and Holly which, apart from Hawthorn, are components of the relict oak woodland that lies within c.120-150m of the northern boundary of the enclosure (Table 2). Very occasionally encountered (in the enclosures but not in the quadrats) were seedlings of Sycamore *Acer pseudoplatanus* (one in the northern half in both 2016 and 2017) and Grey Willow *Salix cinerea* (three in the

southern half in 2017). Self-seeded oaks appeared to be less abundant in the southern half of the enclosure. The preponderance of Rowan and Birch (and Sessile Oak in the Northern half) amongst the self-seeded trees is emphasised by the species composition in the quadrats (Figure 5, p171) although it should be remembered that many of the trees in the southern quadrat were planted (Figure 3). Overall, colonisation did not depend on tree planting and might well have been left to natural regeneration.

Although trees (apart from planted conifers) are relatively sparse in the Upper Burbage Valley, and the pool of species is limited (Table 2), they evidently produced seeds that reached the enclosure. Amongst the trees that colonised, Birch seeds are dispersed by wind while Rowan, Holly and Hawthorn are spread by berry-eating birds. Oaks arise from acorns carried, cached, and forgotten by corvids and/or small mammals (Worrell & Nixon, 1991; den Ouden, Jansen & Smit, 2005).

The much greater rate of colonisation by trees in the northern quadrat was very noticeable. By 2019 the northern quadrat had 70 self-seeded trees, whereas amongst trees in the southern quadrat there were only nine that lacked rabbit guards (some of which were probably planted but had lost their guards) (Figure 3). When the positions of the two quadrats were fixed in 2015 it was anticipated that they would be replicates – both reflecting relatively uniform tree colonisation within the whole enclosure. However, the large difference that soon developed between the quadrats (Figures 3-5, p171) suggested that the north and south ends of the enclosure had developed differently. The visual observation of generally more oak seedlings and saplings in the northern end of the enclosure supported this conclusion. A probable reason for the more rapid colonisation of the northern end is that it is closer to the area of relict woodland that is a likely source of seeds. This agrees with Harmer, Boswell & Robertson (2005) who found that seedlings of Pedunculate Oak *Quercus robur* and Ash *Fraxinus excelsior* decreased with distance from parent trees in a Sussex woodland following clearance of understorey. Similarly, Mirschel, Zerbe & Jansen (2011) showed that regeneration of Sessile Oak and Beech *Fagus sylvatica* was greater close to seed sources in pine forest in Germany. It also, to a degree, agrees with Spracklen *et al*. (2013) who showed that colonisation by Birch, following clearance of conifer plantation, was closely related to distance from parent trees, over a range of 100m. However, they found no such relationship with oak and Rowan and suggested that this is because dispersal by birds and small mammals is behaviour-related and less predictable than wind dispersal.

The Upper Burbage Valley is grazed all year by sheep and cattle, and the failure of tree seedlings to survive in the control area, between the northern fence of the enclosure and the relict woodland, is evidence of that grazing. There were sheep droppings and cowpats around the outside of the enclosure, and sheep and up to a dozen or so cattle were often in the vicinity. Rabbit and/or hare droppings were present both inside and outside the enclosure. This suggests that there was a degree of grazing and/or browsing by lagomorphs within the enclosure which may have damaged self-seeded trees (which lacked rabbit guards). Additionally, in August 2019, it was noted that many self-seeded oaks and Rowan had their leaders bitten off, at <1m height, and were re-growing from side shoots. Also, some planted Oak, Rowan, and Birch, that retained their rabbit guards, had lost their leaders above the guards and some had been stripped of their bark (Figure 7, p172). There may have been squirrel damage, but also the integrity of the enclosure may have been breached. Sheep may have found a way in or, perhaps more

likely, deer. Deer numbers in the Peak District have increased in recent years (Rotherham, 2000; Rotherham & Derbyshire, 2012) and since the top of the fence is in places as little as c.60cm above the top of adjacent boulders, it is probably jumpable by deer. It might be because of this damage that none of the trees in the northern quadrat had, by 2019, exceeded 2m in height.

The observation that there was a surge in the number of self-seeded tree seedlings in the northern quadrat in 2016, that was not repeated in later years (Figure 3, p171), is interesting. Sessile Oak, also Rowan and Birch, contributed substantially to this surge (Figure 5, p171). The reasons for this one-year surge are not necessarily straightforward because interactions between physical and biotic environment, and tree regeneration are complex (Annighöfer *et al.*, 2015). Interpretive comment is, however, possible.

(1) Some trees have 'seed years' in which they produce heavy crops. For example, oaks in Britain tend to have heavy seed years at intervals of about 6-7 years, while in other years few or no acorns are produced (Worrell & Nixon, 1991). Predation losses are high and only a small proportion of acorns go on to yield seedlings. Thus Shaw (1968) found that in a good year for acorns (1964) in a Sessile Oak woodland in North Wales only 0.6% of the acorn fall produced seedlings. Seedlings in the Burbage enclosure presumably arose from acorns that not only had survived predation but also had the luck to have been carried from the relict woodland to the enclosure. Presumably 2015 was a good year for acorns. There is also year-to-year variation in berry production by Rowan, with light crops in some years (Raspé, Findlay & Jacquemart, 2000) while Downy and Silver Birch show great annual variation in both seed production and proportion of viable seed (Atkinson, 1992).

(2) Successful germination and the initial growth of tree seedlings may be greater when the ground is broken by livestock trampling and where grazing reduces competition from ground flora. Seedlings are, however, soon lost to grazing. After the enclosure was fenced and livestock were excluded, ground conditions were, in early 2016, apparently still favourable for germination. In subsequent years, however, there was no trampling. Wavy Hair-grass became more vigorous (Figure 6, p172) and ordination analysis (Figure 8, p174) indicated change in the entirety of the ground flora. A strongly growing ground flora is likely to reduce the success of acorns (Worrell & Nixon, 1991). Furthermore, Jarvis (1964) suggested that humus derived from Wavy Hair-grass is inhibitory to root growth of Birch and Sessile Oak and to growth of Birch seedlings. He also found that Wavy Hair-grass competes effectively for inorganic nutrients. Atkinson (1992) refers to evidence that grazing and trampling by livestock in woodland in the Cairngorms and Derbyshire can favour germination of Birch (with seedlings subsequently succumbing to grazing) whereas there is little or no germination in the absence of disturbance. It follows that in 2016, shortly after enclosure in 2015, there was perhaps a brief opportunity for tree seedlings to germinate and thrive. However, in later years, when cessation of grazing permitted greater development of Wavy Hair-grass and other ground flora, conditions perhaps became less favourable for tree seedlings.

The Derbyshire example cited by Atkinson is Pigott's study of Yarncliff Wood in the Lower Burbage Valley (Pigott, 1983). At the beginning of the 1950s this Sessile Oak woodland was grazed by sheep. There was no regeneration by Sessile Oak and little by Birch. The ground flora, dominated by Wavy Hair-grass, and with Bilberry and Bracken, had many plants in common with that found nearly 70 years later in the Upper Burbage Valley (Table 1, p173). In 1955 an

enclosure of c.1.12ha was constructed in Yarncliff Wood. The subsequent appearance of oak seedlings in the enclosure appeared to be related to good seed years. 1955 was a moderate year for acorns and oak seedlings were found in 1956. The next good year for acorns was 1959 and seedlings appeared in 1960. No oak seedlings or saplings survived outside the enclosure. Birch seedlings were plentiful in 1956 both inside and outside the enclosure. Those in the enclosure tended to survive while those outside were quickly lost. In later years, however, there was little or no regeneration by Birch and this was put down to competition with the denser sward of Wavy Hair-grass that developed after enclosure. There is perhaps a parallel here with the 2016 surge in tree seedlings that was observed in the northern part of the Upper Burbage Valley enclosure soon after its construction in 2015.

By 1981, a quarter century after it was set up, Pigott's enclosure had Sessile Oak that continued to regenerate, with saplings and trees of various ages, whereas there was no continuing regeneration of Birch. Other trees that had colonised the enclosure included Rowan and Holly. Wavy Hair-grass had become less important in the ground flora while Bilberry and Bracken had increased substantially (Pigott, 1983). Following Pigott's unequivocal demonstration of the adverse effect of sheep grazing on tree regeneration, the National Trust enclosed the entire area of Yarncliff Wood in about 1988. When I visited in October 2013, the fencing of the early enclosure was broken down and there was regeneration of trees, and thriving ground flora, throughout the wood. It will be interesting to see if this is a precursor for the long-term future of the Upper Burbage Valley enclosure.

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Peter Skidmore (1936–2009) was a nationally-known entomologist, especially involved with the Coleoptera and Diptera. In the latter, he was particularly interested in the immature stages of the sub-order Cyclorrhapha. Further, his work on the Muscidae and the development of research on fossil Diptera had international significance. The former culminated in a global review, *The biology of the Muscidae of the world.* However, Peter's expertise covered a range of insect orders. It extended to other disciplines, and he had linked skill as an art-trained illustrator. Born in Manchester and then living near Oldham, Peter moved to Doncaster in 1965, with much of his career spent at the town's museum & art gallery. At Doncaster, he was particularly interested in the entomology of the Humberhead peatlands. Peter was subsequently a self-employed entomological consultant, and wrote numerous reports during that later period. Peter's involvement with the Yorkshire Naturalists' Union embraced activity in the Entomological Section, including as a long-serving Diptera recorder

for the county. Peter was the Union's President in 1995. Academically, beyond his doctorate, Peter was a Leverhulme post-doctoral fellow in the University of Sheffield's Dept of Archaeology. This enabled him to continue his work on fossil Diptera from archaeological sites, as well as to expand on his long-term interest in the origins of North Atlantic island insect faunas.

Peter's productiveness over six decades generated much published work and unpublished data, leading the writer to attempt a bibliographical listing. The final version of this, including posthumous items, amounts to 254 dated and nine undated entries. From it, during 2020 an A4 booklet has been produced, *A Consolidated List of Titles by Peter Skidmore PhD FRES*. Following Peter's death, obituaries, tributes and recollections were generated, and for completeness, biographical material of all dates is also listed in the booklet. Copies are available gratis; contact the above email address for details.

I am grateful to Peter Tuffrey for the image of 'Skiddy' at home in July 1995.

Field Note: Ahoy there! The Nationally Scarce pirate spider *Ero aphana* new to Yorkshire

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If the Covid-19 pandemic has taught naturalists anything, it is that one does not need to travel far to find a wealth of wildlife. In particular, the lockdown of summer 2020 forced many of us to look more closely at our immediate surroundings. I've been amazed at what wildlife can be found even inside the house which I rent in York, from carpet beetles to pseudoscorpions. But an especially exciting find was in my bathroom (SE 612509), at about 11:40 pm on 30 May. I noticed a small spider with an unusually shaped globular abdomen (Figure 1, p181) skulking around the frame of the open bathroom window. This was confirmed as the Nationally Scarce

pirate spider *Ero aphana* (Walckenaer, 1802), new to Yorkshire, by Peter Harvey of the Spider and Harvestman Recording Scheme and subsequently by Richard Wilson (YNU Yorkshire spider recorder). I saw the spider only once again in the bathroom over the summer, again late in the evening, on 16 July.

E. aphana has four charismatic tubercles on its abdomen arranged in a rough square (Figure 1). It is similar to *E. tuberculata,* but in addition to physical differences (including in the shape and arrangement of the tubercles), *E. aphana* is more of an early summer species whereas *E. tuberculata* tends to be found in late summer and early autumn (Bee, Oxford & Smith, 2017). Since around 2000, *E. aphana* has been expanding its range dramatically from a scattering of original sites in southern England, reaching as far north as Nottinghamshire (British Arachnological Society, 2020) and turning up in an increasingly diverse range of habitats, including gardens and buildings, having previously been largely restricted to heathland (Peter Harvey, pers. comm.). There also appears to be a (presumably recent) record from northern Wales (British Arachnological Society, 2020). The York record represents a substantial jump northwards in the spider's British range.

Figure 1. The pirate spider *Ero aphana*, showing the four raised tubercles on its abdomen. Note fingertip for scale in the left-hand image. *Photos*: Sam Buckton.

Pirate spiders (Mimetidae) have a fascinating, if sinister, lifestyle. Roberts (2001) describes this perfectly in all its gruesome detail: "They seek out the webs of other spiders and, moving slowly and surreptitiously, pluck at the threads to attract attention. The occupant, sensing prey or perhaps a mate, is then attacked, quickly paralysed, and then sucked dry through a small hole in the legs." This behaviour lends pirate spiders their German name of *Spinnenfresser* ('spider-eater'). Keep an eye out for this distinctive species wherever you are in Yorkshire, or indeed elsewhere in the north of England, including indoors. Can you extend its known range even further? Perhaps you'll be lucky enough to see its piracy in action.

Acknowledgements

I wish to thank Esmond Brown, Peter Harvey and Richard Wilson for their assistance in

identifying the spider and confirming its status in Yorkshire.

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Investigations of the Aculeate Hymenoptera of urban York

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Introduction

There is a growing awareness of the importance of urban areas for biological conservation (Tucker *et al.* 2005). In England, 7% of the land area is covered by cities and towns of more than 10,000 people and with 80% of the human population in such urban areas, gardens in particular, are important in bringing people into contact with wildlife (Loram *et al.*, 2007). Urban areas are often very heterogeneous (e.g. flower beds, shrubs and trees, lawns, rockeries, ponds, paths, dead wood and old walls) so providing many biotopes capable of supporting a rich biodiversity.

The main requirements of aculeates are food resources and nesting sites, as well as overwintering, sunning, mating sites and, sometimes, building materials to make their nests. Nesting sites can be in subterranean burrows usually excavated by them or by using pre-existing crevices and small mammal burrows. Subterranean nesters often require dry and friable (loose or firm) soil which is usually bare or sparsely vegetated in sheltered sunny situations. Aerial nesters use hollow stems of herbs or shrubs, e.g. bramble, old beetle burrows in dead wood, crevices in old mortar or nests which hang from branches of trees or shrubs, again usually in sheltered sunny situations. Bees require flower-rich areas with pollen sources, and wasps and ants require hunting areas for often specific prey species which are needed as food resources for their larvae. Suitable hunting areas are found in a range of habitats including grasslands, scrublands and woodlands. Some wasps, ants and bees are cleptoparasites, parasitoids or social parasites on other, often specific, wasps, ants or bees. All species need nectar as a food source, so again there is a need for flower-rich areas. Further information is given by Grissell (2010).

During the 2000s I have recorded aculeates at 18 sites in urban York and, mainly during the 1970s and 1980s, at Heworth, York. This paper is an account of my findings.

Methods

The sites were visited from April until September during warm and sunny days. Each visit lasted for at least one hour and all habitats on the site were visited. All aculeate species were recorded either by sight or captured with a hand net for later determination at home. Two indices were calculated for the community of aculeates investigated, the Parasitic Load (PL) and Aerial Nesting Frequency (AF), to enable comparisons to be made with elsewhere:

The Parasitic Load (PL) = 100 * P/(H + P) where P is the number of parasites (Cleptoparasites & Parasitoids) and H is the number of possible hosts.

The Aerial Nesting Frequency (AF) = 100 * A/(A + S) where A is the number of Aerial Nesters and S is the number of subterranean nesters.

The sites

The 18 sites were divided into seven groups (Table 1, p184) as follows:

1. Two enhanced sites which were particularly managed to encourage wildlife with planted flowers, shrubs, dead decaying wood and, at the York Victorian Cemetery, a wall with loose mortar.
2. Two river-related sites which were rich in flowers and with sandy/silty banks.
3. Three areas were enclosed by urban development. These sites were managed by the York Authority although a local group also managed Heworth Holme. Flowers were abundant and dead wood was present at Fishponds Wood and Heworth Holme. A sand pit was present at Bachelor Hill and a second one was excavated by the York Authority.
4. The four enclosed countryside sites were formally farmland and were now unimproved grassland with some hedges, although Hob Moor was seasonally grazed by cattle. Flower rich areas, bare paths and small vertical banks were present.
5. Five formal Parks were managed by York Authority although a local group also managed Glen Gardens. Many planted flowers were present and, at some sites, bee hotels.
6. The Cycle Track was adjacent to St. Nicholas Field extending westward and northward and then extended further northward adjacent to Dodsworth Road. The Cycle Track was surrounded by urban development and did not run alongside a street or road. The Track was surrounded by hedges rich in flowers and in some places with small sandy banks and dead wood.
7. The fen woodland was Askham Bog with some flowering plants such as bramble.

The further site of Heworth was really two sites, one situated at Heworth Croft (SE6152) where a Suction Trap was operated, and my garden and surrounding area at Elmfield Terrace (SE6165) where a Malaise Trap was operated. Both Heworth sites are really gardens, rich in flowers with Bee Hotels at the Elmfield Terrace area.

Results

The results are shown in Tables 1 to 4 (pp184-6). Table 1 shows the number of visits to each site and to each group of sites, giving a total of 200 visits. The sites with fewer visits reflected the difficulty of finding new species.

Table 1. The number of visits to each site and group of sites.

Group Name	Site Name	No. of visits	No. of visits to Group
Enhanced Sites	St. Nicholas Field (SE6151)	21	55
	York Victorian Cemetery (SE6150)	34	
River Related	Fulford Ings (SE6049)	24	38
	Rawcliffe Meadows (SE5753)	14	
Enclosed Urban	Bachelor Hill (SE5751)	11	27
	Fishponds Wood (SE5751)	11	
	Heworth Holme (SE6252)	5	
Enclosed Countryside	Bootham Stray (SE5654)	3	26
	Clifton Backies (SE5954)	11	
	Hob Moor (SE4335)	10	
	Walmgate Stray (SE6150)	2	
Formal Parks	Glen Gardens (SE6152)	6	32
	Hull Road (SE6251)	6	
	Rowntree (SE6050)	7	
	West Bank SE5851)	5	
	Yorkshire Museum Garden (SE5952)	8	
Cycle Track	St. Nicholas – Dodsworth (SE6151 to SE6053)	16	16
Fen Woodland	Askham Bog (SE5748)	6	6

Table 2 shows the number of recorded species of each family or subfamily for each of the seven site groups and Heworth Gardens.

Table 2. The number of species recorded at each group of sites.

	Enhanced Sites	River Related	Enclosed Urban	Enclosed Countryside	Formal Parks	Cycle Track	Fen Woodland	Heworth (Garden)
Chrysididae	6	4	1	1				2
Mutillidae								1
Sapygidae	1							1
Pompilidae	3	1						
Eumeninae	5	4	1		1	1		5
Crabronidae	19	22	21	6	6		1	18
Total Solitary Wasps	**34**	**31**	**23**	**7**	**7**	**1**	**1**	**27**
Colletinae	4	4	2	2	2	4	1	3
Andreninae	7	10	6	8	3	3	1	3
Halictinae	9	8	5	4	6	6	1	3
Megachilinae	7	3	7	7	3	6		6
Sol. Apinae	6	4	6	6	3	1	1	4
Total Solitary Bees	**33**	**29**	**26**	**27**	**17**	**20**	**4**	**19**

Formicidae		1	1		1			2
Vespinae	4	5	3	3	2	2	2	6
Social Apinae	12	9	12	10	10	9	8	9
Total Social Species	**16**	**15**	**16**	**13**	**13**	**11**	**10**	**17**
Total No. Species	**83**	**75**	**65**	**47**	**37**	**32**	**15**	**63**

Four groups (Enclosed Countryside, Formal Parks, Cycle Track and Fen Woodland) showed a relative lack of solitary wasps recorded compared with the other four groups (Enhanced, River Related, Enclosed Urban and Heworth Gardens) with the consequence that from each of these latter four groups more aculeates were recorded.

Table 3 shows the 138 bees, wasps and ants recorded across all sites, categorised according to families/subfamilies. From Heworth gardens nine species not present in the other sites were recorded: (*Myrmosa atra* Panzer, *Dolichovespula saxonica* (Fab.), *Ectemnius lapidarius* (Panzer), *E. ruficornis* (Zetterstedt), *Psenulus pallipes* (Panzer), *Pemphredon lethifer* (Shuckard), *Diodontus tristis* (Van der Linden), *Passaloecus singularis* Dahlbom, *Argogorytes fargeii* (Shuckard), *Coelioxys elongata* Lepeletier). The 138 species, excluding the DEB species, represent about 44% of the all-time Yorkshire List (Archer, 2018) and the 130 species recorded from 2000 from the 18 sites, excluding the DEB species, represent about 48% of aculeates recorded since 2000 (Archer, *in press*).

Table 3. The number of aculeates recorded for each family or subfamily across all sites.

Chrysididae	Mutillidae	Sapygidae	Pompilidae	Eumeninae	Crabronidae
6	1	1	4	7	40
Total Number of Solitary Wasps 59					
Collectinae	Andreninae	Halictinae	Megachilinae	Solitary Apinae	
5	13	18	10	10	
Total Number of Solitary Bees 56					
Formicidae	Vespinae	Social Apinae			
2	7	14			
Number of Social Species (Ants, Wasps, Bees) **23**					
Total Number of Ants, Wasps, Bees **138**					

Table 4 p186 shows that among the recorded solitary species there were 50 wasps and 40 bees that provided nests for their offspring and eight wasps and 16 bees parasitic (usually cleptoparasites) on the nesting species. The wasp and bee parasitic load was within the range found in Yorkshire. Among the nesting species were 17 wasp and 13 bee subterranean nesters and 33 wasp and 27 bee aerial nesters . The aerial nesting frequency for wasps and bees was higher than that for all British species together.

Table 4. The parasite loads (PL) and aerial nesting frequencies (AF) of the solitary species.

	No. Hosts (H)	**No. Parasites (P)**	**PL**	**Yorkshire Range**
Solitary Wasps	50	8	13.8%	10 – 25%
Solitary Bees	40	16	28.6%	21 – 41%
	No. Aerial nesters (A)	**Subterranean nesters (S)**	**AF**	**AF for all British Spp.**
Solitary Wasps	33	17	66%	46%
Solitary Bees	13	27	33%	18%

Table 5 shows the three groups and seven sites with rare species. Five of them were recorded from Enhanced sites, four from Enclosed Urban sites, two from Cycle Track and one in Heworth Garden. A further three, which are rare in the recording period from 2000, included two from the Enhanced sites and one from the Enclosed Countryside sites (Archer, 2020).

Table 5. The sites where rare species were found.

Species	**Group**	**Sites**
Pseudomalus violaceus (Scopoli)	Enhanced	St. Nicholas Field
Chrysura radians Harris	Enhanced	St. Nicholas Field
Dolichovespula saxonica (Fabricius)	Heworth	Gardens
Crossocerus distinguendus (Morawitz)	Enhanced	York Victorian Cemetery
Stigmus pendulus Panzer	Enhanced, Enclosed Urban	St. Nicholas Field, Fishponds Wood
Stigmus solskyi Morawitz	Enhanced, Enclosed Urban	St. Nicholas Field, Fishponds Wood
Philanthus triangulum (Fabricius)	Enclosed Urban	Bachelor Hill
Megachile ligniseca (Kirby)	Enclosed Urban, Cycle Track	Fishponds Wood, Heworth Holme, Cycle Track
Stelis punctulatissima (Kirby)	Cycle Track	Cycle Track
Rare since 2000		
Andrena varians (Kirby)	Enclosed Countryside	Hob Moor
Crossocerus nigritus Lepeletier & Brullé	Enhanced	York Victorian Cemetery
Ectemnius dives (Lepeletier & Brullé)	Enhanced	St. Nicholas Field

Discussion

Despite the lack of solitary wasps at four habitat groups (Table 2, p184), the wasp parasitic load was within the Yorkshire range (Table 4) because of those parasitic species recorded at the other four habitat types. The cleptoparasites of the wasp genera *Evagetes* and *Nysson* were absent probably because usually only zero, one or two records of their hosts were recorded. In contrast, the chrysid wasps were recorded over 50 times because their hosts, the aerial nesting eumenid wasps, were frequently recorded, over 80 times. The parasitic load of the bees was within the Yorkshire range (Table 4). The cleptoparasitic bees (mainly genera *Nomada* & *Sphecodes*) with their solitary bee hosts (mainly genera *Andrena* & *Lasioglossum*) were recorded many times.

The relative abundance of aerial nesting wasps and bees indicates a lack of subterranean nesting species (Table 4), probably due to the lack of extensive bare or sparsely vegetated soil, which was only present at the two river related sites and Bachelor Hill. No underground

nesting social wasps or bumblebees were found. Wasps and bees using nectar and pollen food resources on sites without evidence of nests were presumably nesting outside these sites.

By including the records of Uffen, Grayson, Broadhead and Payne from six visits to Askham Bog during the 1980s and 90s, an additional eleven species can be recorded for this site, giving a total of 26 species from twelve visits. The total list for Askham Bog is 53 with most recorded during the 1930s and 40s, mainly by Hincks with the help of Butterfield, Fordham and Elliott. The subsequent loss of species was probably due to vegetation growth covering possible nesting sites.

The rare aculeates shown in Table 5 have either always been rare in Yorkshire or, in the case of *Philanthus triangulum*, *Dolichovespula saxonica* and *Stelis punctulatissima,* only recently recorded here. *P. triangulum* was found nesting in a sandy pit at Bachelor Hill where its prey *Apis mellifera* was also present. *D. saxonica* was found foraging nectar from figwort at Heworth. *Stelis punctulatissima* was found at Rawcliffe Meadows where its host *Anthidium manicatum* was not found, but was found at nearby Clifton Backies.

Of those longer established rare species, *Pseudomalus violaceus* and *Chrysura radians* were found at St. Nicholas Field associated with decaying wood in which their hosts nest. *Stigmus pendulus* and *S. solskyi* were found at St. Nicholas Field and Fishpond Wood, associated with decaying wood in which they nest. In addition, three species have become rare since 2000: *Andrena varians* is a rare subterranean nester; *Crossocerus nigritus* at York Victorian Cemetery was associated with dead wood and *Ectemnius dives* was also associated with dead wood at St. Nicholas Field.

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Breeding birds to the west of Sheffield – are the reported declines just an artefact caused by differences in observer competence?

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Introduction

In Gosney (2015) I compared the numbers of birds counted in the Sheffield area during Timed Tetrad Visits (TTVs) carried out in 1988-90 and, 20 years later, in 2008-10. The results should have been directly comparable as they were based on exactly the same number of hours of effort but I pointed out that in 2008-10 there were a greater number of tetrads which appeared not to have been thoroughly covered. This raises the possibility that some of the reported species declines could have been caused (or at least exaggerated) by birds being missed by inexperienced birders during the later survey. To test this, during 2016-2020 I repeated the 1-hour counts in three of those 10km squares (SK27, 28 and 29) to see whether more comprehensive coverage would confirm or contradict the reported declines.

Method

In each survey, observers were asked to count all birds seen or heard during a 1-hour Timed Tetrad Visit (TTV). The walk should be planned to include as many habitats as possible within the tetrad and fledglings and birds flying high overhead should not be counted. In 1988-90 and 2008-10 the surveys were done by many observers, with some tetrads represented by more than one TTV. In 2016-20 all the counts were done by the author in May 2016 (SK29), May 2017 (SK27) and April, May and June 2020 (SK28): see Gosney (2018a, 2018b and 2020). Where more than one count was made, the only number used for this analysis was that recorded during the 'best hour' – the TTV that yielded the greatest number of species. If, for some species, higher counts were recorded during the other visits these were not included in the totals.

Results

Coverage

The three hectads (SK27, 28 and 29) were chosen because they each included several tetrads that were deemed to be under-recorded in 2008-10. To judge whether a tetrad has been adequately covered, the number of species recorded during the 'best-hour' was compared with the 'expected species total' – based on the number found during the Breeding Birds Survey, run by the Sheffield Bird Study Group (Wood and Hill 2013), in which observers were asked to list all the species found during 2003-08 given unlimited time over 6 breeding seasons. Any tetrad yielding less than 40% of that expected total was deemed to be under-recorded. Table 1 (p189) shows how many tetrads were under-recorded in each period and also compares the mean number of species found per tetrad.

This table shows that the surveys in 2016-20 achieved slightly higher species counts than in 1988-90, and much higher than in 2008-10 when coverage was clearly less thorough.

Table 1. Coverage of three hectads, SK 27, 28 and 29 during three survey periods using only data for the 'best hour' per tetrad.

	1988-90	**2008-10**	**2016-20**
No of tetrads covered	73	70	74
No of tetrads with less than 40% of expected species	9	29	2
Mean number of species counted per tetrad	29.5	25.2	32.7

So, given that the data used for 2008-10 included a high proportion of under-recorded tetrads, what impact did that have on the numbers of birds counted in the three hectads overall? Table 2 lists the species that showed apparent declines of over 33% in those hectads for the period 1988-90 to 2008-10 and compares them with the declines found between 1988-90 and 2016-2020.

Table 2. Species declines in SK27, 28 and 29, calculated by comparing counts in 1988-90 with a) 2008-10 and b) 2016-20.

Species	**% Decline a) to 08-10**	**% Decline b) to 16-20**	**Comment**
Wood Warbler *Phylloscopus sybilatrix*	-95	-86	Decline confirmed
Spotted Flycatcher *Muscicapa striata*	-90	-57	Decline confirmed but was exaggerated
Tree Pipit *Anthus trivialis*	-86	-40	Decline confirmed but was exaggerated
Tufted Duck *Aythya fuligula*	-86	-59	Decline confirmed but was exaggerated
Lesser Redpoll *Carduelis cabaret*	-80	-65	Decline confirmed but was exaggerated
Whinchat *Saxicola rubetra*	-79	-76	Decline confirmed
Redstart *Phoenicurus phoenicurus*	-76	-4	No clear decline
Cuckoo *Cuculus canorus*	-75	-46	Decline confirmed but was exaggerated
Willow Tit *Poecile montana*	-75	-100	Even greater decline noted
Starling *Sturnus vulgaris*	-67	-66	Decline confirmed
Sparrowhawk *Accipiter nisus*	-67	-78	Decline confirmed
Magpie *Pica pica*	-60	-38	Decline confirmed but was exaggerated
Swift *Apus apus*	-60	-80	Even greater decline noted
Yellowhammer *Emberiza citrinella*	-60	-67	Decline confirmed
Willow Warbler *Phylloscopus trochilus*	-50	+5	No evidence of decline

Green Woodpecker *Picus viridis*	-50	-70	Even greater decline noted
Pied Flycatcher *Ficedula hypoleuca*	-50	+80	Has increased!
Twite *Carduelis flvirostris*	-50	-100	Even greater decline noted
Mistle Thrush *Turdus viscivorus*	-47	-18	Decline uncertain
Treecreeper *Certhia familiaris*	-47	-30	Decline still probable
Goldcrest *Regulus regulus*	-43	-32	Decline still probable
Pied Wagtail *Motacilla alba*	-41	-9	No evidence of decline
Dipper *Cinclus cinclus*	-40	0	No evidence of decline
Wheatear *Oenanthe oenanthe*	-38	-62	Even greater decline noted
Song Thrush *Turdus philomelos*	-36	+17	No evidence of decline
Reed Bunting *Emberiza schoeniclus*	-36	+32	Likely to have increased
Ring Ouzel *Turdus torquatus*	-36	+43	Likely to have increased
Meadow Pipit *Anthus pratensis*	-35	-29	Decline still probable
Grey Wagtail *Motacilla cinerea*	-35	+65	Has increased
Blackbird *Turdus merula*	-34	+4	No evidence of decline
Moorhen *Gallinula chloropus*	-34	+28	No evidence of decline
Little Grebe *Tachybaptus ruficollis*	-33	-25	Decline still probable

Of the 13 species that were thought to have declined by 50% or more, all were confirmed to have declined, though not necessarily to the same extent, apart from Redstart which showed no clear decline. Of the species whose decline had previously been calculated as between 33% and 50%, some (Green Woodpecker, Willow Tit, Twite and Wheatear) had since declined further, others (Treecreeper, Goldcrest, Meadow Pipit and Little Grebe) appear to have declined to a lesser extent but, in most other cases, the decline was no longer obvious and indeed some species (Pied Flycatcher, Ring Ouzel, Reed Bunting and Grey Wagtail) have actually increased.

Table 3 shows similar data for those species that had been counted in 1988-90 but not found at all in the 2008-10 survey. Have those species really disappeared from the three hectads?

Table 3. Numbers of birds counted in SK27, 28 and 29 during up to 74 one-hour visits in each of three decades: species that seemed to have disappeared between 1988-90 and 2008-10.

Species	Count 1988-90	Count 2008-10	Count 2016-20	Comment
Red-breasted Merganser *Mergus serrator*	2	0	0	Disappearance 'confirmed'
Hen Harrier *Circus cyaneus*	1	0	0	Disappearance 'confirmed'
Goshawk *Accipiter gentilis*	1	0	0	Disappearance 'confirmed'
Merlin *Falco columbarius*	1	0	0	Disappearance 'confirmed'
Dunlin *Calidris alpina*	3	0	0	Disappearance 'confirmed'
Redshank *Tringa totanus*	5	0	0	Disappearance 'confirmed'
Short-eared Owl *Asio otus*	2	0	0	Disappearance 'confirmed'
Sand Martin *Riparia riparia*	7	0	19	Disappearance clearly false
Yellow Wagtail *Motacilla flava*	3	0	0	Disappearance 'confirmed'
Crossbill *Loxia curvirostra*	3	0	8	Disappearance clearly false
Hawfinch *Coccothraustes coccothraustes*	1	0	0	Disappearance 'confirmed'

This table does not include Herring Gull *Larus argentatus* (as it is a non-breeding species) and Tawny Owl *Strix aluco* (as it is nocturnal); both species were reported in 1988-90 and 2016-20 but not 2008-10.

Note that 'confirmed' is in inverted commas because it would take many more than 75 hours of birding to truly confirm that any species was absent from an area as big as 3 10-km squares. We certainly know from sightings outside the 1-hour counts that Goshawk, Merlin, Short-eared Owl and Yellow Wagtail were all recorded breeding in this area at some point between 2016 and 2020 but it's likely that Red-breasted Merganser, Hen Harrier, Dunlin, Redshank and Hawfinch no longer breed here. Thankfully, two species, Sand Martin and Crossbill have clearly not disappeared, although, of course, Crossbills are present in certain years only.

Are the changes since 2008-10 due solely to better coverage?

Some of the species with low counts in 2008-10 were counted in much better numbers when the counts were repeated during 2016-20. However, the repeat surveys were carried out roughly 10 years later. It is possible that those species were counted correctly in 2008-10 but their populations have since recovered. If that were the case we might expect evidence of such a recovery on a national scale too. Table 4 p192 looks at those species whose 'declines' to the west of Sheffield up to 2008-10 now appear less pronounced or even reversed. It shows the percentage change in the numbers counted between the 2008-10 survey and the more recent repeat surveys and compares them with the national percentage change over a similar time period as measured by the Breeding Bird Survey of the British Trust for Ornithology (Harris *et al.,* 2020).

Table 4. Observed percentage changes in numbers counted of selected species in the west of Sheffield compared with the rest of the UK.

Species	West of Sheffield % change 2008-10 to 2016-20	UK % change 2008-18
Spotted Flycatcher	+433	-11
Tree Pipit	+353	+6
Tufted Duck	+200	-2
Lesser Redpoll	+87	+21
Redstart	+352	+8
Cuckoo	+118	+13
Magpie	+55	0
Willow Warbler	+112	-3
Mistle Thrush	+59	-15
Pied Flycatcher	+800	N/A
Pied Wagtail	+58	-10
Dipper	+67	-6
Song Thrush	+77	+2
Reed Bunting	+105	+5
Ring Ouzel	+122	+37
Grey Wagtail	+140	-18
Blackbird	+60	-2
Moorhen	+55	-28

Note that many of these species showed at least a 100% increase (ie doubling) of numbers counted when surveyed thoroughly. None of them have increased nationally to anything like the same extent although the higher counts in the Sheffield area of Ring Ouzel, Cuckoo and Redpoll in 2016-20 could all be at least partly a reflection of national increases since 2008-10. Otherwise it is unlikely that the higher numbers of these species counted around Sheffield during 2016-20 were due to improvements in the fortunes of those birds in the intervening years. This confirms that the numbers of several species counted during 2008-10 were artificially low due to those species being overlooked.

The above analysis only considers those species that appeared to have declined up to 2008-10. The following species also showed at least a doubling of numbers counted in 2016-20 compared with 2008-10.

Mandarin Duck *Aix galericulata* (1067% increase)
Buzzard *Buteo buteo* (260%)
Oystercatcher *Haematopus ostralegus* (600%)
Stock Dove *Columba oenas* (284%)
Wren *Troglodytes troglodytes* (105%)
Robin *Erithacus rubecula* (132%)
Blackcap *Sylvia atricapilla* (151%)
Chiffchaff *Phylloscopus collybita* (168%)
Nuthatch *Sitta europaea* (106%)
Raven *Corvus corax* (260%)
Siskin *Carduelis spinus* (500%).

Of these, Mandarin Duck, Buzzard, Oystercatcher, Blackcap, Chiffchaff, Nuthatch, Raven and Siskin have all shown obvious population increases in the Sheffield area in the last 10 years. It looks like Stock Dove has increased too; for example in SK28 in 2020, despite only 3 hours of effort per tetrad, they were found in even more tetrads (20) than in 2003-08 (16) when the search included 6 breeding seasons with unlimited time available. For the remaining species (Wren and Robin) the difference between the two surveys could be be due to these species being under-counted in 2008-10.

How great an impact did the under-recording have on the results for the Sheffield area as a whole?

The results above show that the declines of a number of species in 3 hectads (SK27, 28 and 29) between 1988-90 and 2008-10 were, at least to some extent, exaggerated due to under-recording in 2008-10. This means that some of the species listed as declining in the Sheffield area as a whole in Gosney (2015) may not have decreased so much. For those species, Table 5 shows the extent of the decline for the whole Sheffield area (12 hectads) if the counts for SK27, 28 and 29 are replaced with 'corrected' counts from 2016-20. (For most of the remaining hectads, 'corrected' counts are not considered necessary because the numbers of species counted per tetrad in 2008-11 were similar to 1988-90).

Table 5. Percentage change in numbers of selected species for the whole Sheffield area since 1988-90 if a) only the original 2008-10 data is used and b) if the data for SK27, 28 and 29 is replaced by the more thorough data collected during 2016-20.

Species	a) % change reported	b) revised % change	Comment
Tree Pipit	-88	-64	Still a marked decline
Lesser Redpoll	-87	-77	Still a marked decline
Cuckoo	-78	-64	Still a marked decline
Spotted Flycatcher	-74	-63	Still a marked decline
Redstart	-74	-42	Decline not so pronounced
Pied Flycatcher	-60	+50	Has increased!
Snipe *Gallinago gallinago*	-52	-10	Decline uncertain
Mistle Thrush	-46	-38	Decline still probable
Stock Dove	-33	+25	Has increased!

This suggests that, despite the problems of under-recorded species, the declines described in Gosney (2015) are largely valid apart from the following: Redstart and Snipe have not declined so markedly and Pied Flycatcher and Stock Dove have actually increased! All the other species listed as declining in Gosney (2015), either declined further in the ensuing years or declined to a similar extent even if the new data is used.

Other species that were obviously under-recorded to the West of Sheffield in 2008-10 (Reed Bunting, Ring Ouzel and Grey Wagtail) are not included above as they had not been listed as declining in the area as a whole. This new data doesn't impact on their overall status except in the case of Ring Ouzel which should have been listed as an increasing species (+48%).

Discussion

When the results of TTVs are analysed at a national level, the sample size is so great that the impact of individual tetrads being badly covered becomes insignificant. However, when these results are used for local comparisons it is clear that observer competence can make a significant difference to the results. When comparing local results between two periods it is essential that the observers in the two periods are of equal competence. The number of species recorded per hour gives a good idea of how well a tetrad has been covered; if this figure is similar across two periods then observer competence is unlikely to have an impact on the outcomes. Observer bias can be eliminated if the same observer is used when the survey is repeated or minimised if all the observers are highly competent.

Conclusions

During 2016-20 the author repeated the TTVs carried out in 2008-10 in three hectads to the west of Sheffield (SK27, 28 and 29) and showed that some species were not as scarce as had been reported. It is possible that, where greater numbers were counted in 2016-20 than in 2008-10, this could be due to populations having recovered after a decline but this is not borne out by national data for these species. For these three hectads, the 2008-10 data suggested that 43 species had either disappeared or at least declined by 33% or more since 1988-90. With the improved coverage in 2016-20, those changes were confirmed for 29 species. A further 3 species (Tree Pipit, Tufted Duck and Lesser Redpoll) were confirmed to have declined since 1988-90 but not by as much as was feared. For 7 species (Redstart, Willow Warbler, Mistle Thrush, Song Thrush, Pied Wagtail, Reed Bunting and Dipper) the decline was no longer obvious and two species (Pied Flycatcher and Ring Ouzel) were actually found to be MORE numerous in 2016-20 than 1988-90. Sand Martin and Crossbill were proven not to have disappeared. Although improved coverage in 2016-20 made quite a difference to the figures for these three hectads, they had less of an impact on the published conclusions for the Sheffield area as a whole, except for a few species: Redstart and Snipe had not shown a marked decline and Pied Flycatcher, Ring Ouzel and Stock Dove had increased. This study illustrates that in a local survey such as this with a relatively small sample size it is essential to use observers of similar competence; this can be achieved by using the same observers when the surveys are repeated or by restricting participation to only the most experienced birders.

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Clearwing moths in East Yorkshire

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Clearwing moths (Sesiidae) are convincing wasp, bee, fly or hornet mimics, but can be distinguished by their small head, four transparent wings, a dark patch on the forewings, and lack of a narrow 'waist' between the abdomen and thorax. There are 16 species on the UK list, but only eight have been recorded in Yorkshire and two of these, the White-barred Clearwing *Synanthedon spheciformis* and Red-belted Clearwing *S. myopaeformis*, were last seen in the 19th century (Sutton & Beaumont, 1989). Clearwing moths are generally under-recorded as they are not attracted to light traps, but the increasing use of pheromone lures has demonstrated that many are more widespread than previously believed. Pheromone lures work by replicating the chemicals released by adult females to attract males, which can then be observed or captured. My previous attempts with clearwing moth pheromones have been restricted to observing a lure deployed in the field for a few minutes. In March 2020, however, I was gifted a pheromone trap, which meant I could leave the lures unattended for a few hours. This article describes my experiences with clearwing moths in East Yorkshire (vice county 61) during the 2020 COVID-19 epidemic, when I recorded five of the six species with recent records in Yorkshire.

The Lunar Hornet Moth *Sesia bembeciformis* is probably the most widespread clearwing moth in East Yorkshire (Sutton & Beaumont, 1989), with a total of 21 records from 15 locations up to the end of 2019. There are typically only a small number of records each year, either of adults observed by day or larval exit holes in willow stumps. Unlike the other clearwing moths, there was no commercially available pheromone lure until 2020. Within the first week of its release, in late June 2020, the Lunar Hornet Moth pheromone lure had led to the capture of moths across the country, as evidenced by a flurry of records reported on social media. My lure arrived in early July and I tried numerous times in my garden (in Skidby) in subsequent weeks, but without success. I therefore took the opportunity to go to Skipwith Common, where the clearwing has been recorded previously, on 20 July 2020, with the specific aim of targeting clearwing moths. As I only had a few hours, my plan was to head straight to the Bomb Bay Loop, where I knew there are plenty of sallows. My pheromone trap had been deployed elsewhere, so I simply hung the lure in a net from large sallows for 10–15 minutes at a time. At about the sixth location, during the late morning, I heard and then saw a Lunar Hornet Moth approaching the lure, and successfully netted it for a photograph (see front cover). I failed to record any other clearwing moth that day and further attempts for Lunar Hornet Moth in my garden were unsuccessful, but I am optimistic it is present in the local area, perhaps at Risby Wood or

the areas of sallow off Willerby Low Road or Middledyke Lane in Cottingham. Use of the new pheromone lure will no doubt prove this species to be far more widespread than suggested by the current distribution map (see Box, 2020).

There are only a small number of known Red-tipped Clearwing *Synanthedon formicaeformis* sites in East Yorkshire, but willows, the larval food plants, are widespread and this clearwing is again probably under-recorded. There were 28 records from nine locations in East Yorkshire up to the end of 2019, a total that has been bolstered considerably by multiple sightings at Tophill Low Nature Reserve in recent years. Willow is not particularly common in the Skidby area and the nearest Red-tipped Clearwing records (at Tophill Low Nature Reserve and Broomfleet Washlands) are approximately 15km away, but I was nonetheless mildly optimistic that I would capture it in my garden. My attempts for the first couple of months were unsuccessful, most likely as the adults had not yet emerged, but I was delighted to finally catch one on 20 June 2020 (Figure 1a). As with Lunar Hornet Moth, an increase in the use of the pheromone lure will likely reveal Red-tipped Clearwing to be more widespread than currently known (see Box, 2020). Indeed, it would be worthwhile deploying the lure in any areas with willows, such as near still and running waters in the rivers Hull and Foulness valleys.

The Yellow-legged Clearwing *Synanthedon vespiformis* is apparently one of the scarcest clearwing moths in East Yorkshire, with just four records from three locations, and the nearest recent record (at Skipwith Common in 2014) is approximately 35km from Skidby. This is likely because oaks, the main larval food plants, are relatively uncommon in East Yorkshire. In addition to numerous attempts in my garden, I deployed the Yellow-legged Clearwing pheromone lure at North Cliffe Wood on 02 and 23 June 2020, Skipwith Common on 20 July 2020 and Risby Wood on 23 July 2020, but was unsuccessful. This was disappointing as there are some large oaks at all three of the sites and the species has been recorded at Skipwith Common previously. I was therefore extremely surprised to find one in the trap hanging from the apple tree in my garden on 24 July 2020 (see Figure 1b), especially as there had been nothing in the previous 3 days and the nearest moderately sized oaks that I am aware of are just over 1km away, with Risby (1.5km away) the nearest woodland with oak. It is impossible to know whether I simply captured a wandering individual or if the lure attracted it from a distant population, but I am optimistic that further attempts will prove Yellow-legged Clearwing to be present at North Cliffe Wood, Houghton Moor and Allerthorpe Common, and possibly at Risby Wood or in the vicinity of the small number of large oaks in Cottingham (e.g., near Castle Hill Hospital or Millbeck Wildlife Area).

There were 13 records of Currant Clearwing *Synanthedon tipuliformis* from 12 locations in East Yorkshire up to the end of 2019. I recorded it in my garden in Skidby in 2019 and was confident I would do so again in 2020, especially as I now had a pheromone trap and was forced to work at home during the COVID-19 lockdown. As with Red-tipped Clearwing, my initial attempts were probably before the adults had emerged, but I eventually recorded one on 16 June 2020 (Figure 1c). I did not try again until 25 June 2020, when I again captured a singleton, but subsequent occasional attempts were unsuccessful. I have only two Blackcurrant *Ribes nigrum* bushes in my garden, and the small and infrequent catches suggest that the individuals I captured probably originated from gardens elsewhere in the village. Use of the pheromone lure in gardens and allotments with currant bushes may reveal that the Currant Clearwing is widespread in East Yorkshire.

There are just over 50 records of Six-belted Clearwing *Bembecia ichneumoniformis* from approximately a dozen locations in East Yorkshire. Historically, most records were from coastal areas with abundant Common Bird's-foot-trefoil *Lotus corniculatus*, but the distribution has moved inland in recent decades (Sutton & Beaumont, 1989) and it is now most frequently recorded at Kiplingcotes Nature Reserve, Tophill Low Nature Reserve and various sites in the Hessle area (Box, 2020).

Figure 1a.Red-tipped Clearwing *Synanthedon formicaeformis.*

Figure 1b. Yellow-legged Clearwing. *Synanthedon vespiformis.*

Figure 1c. Currant Clearwing *Synanthedon tipuliformis.*

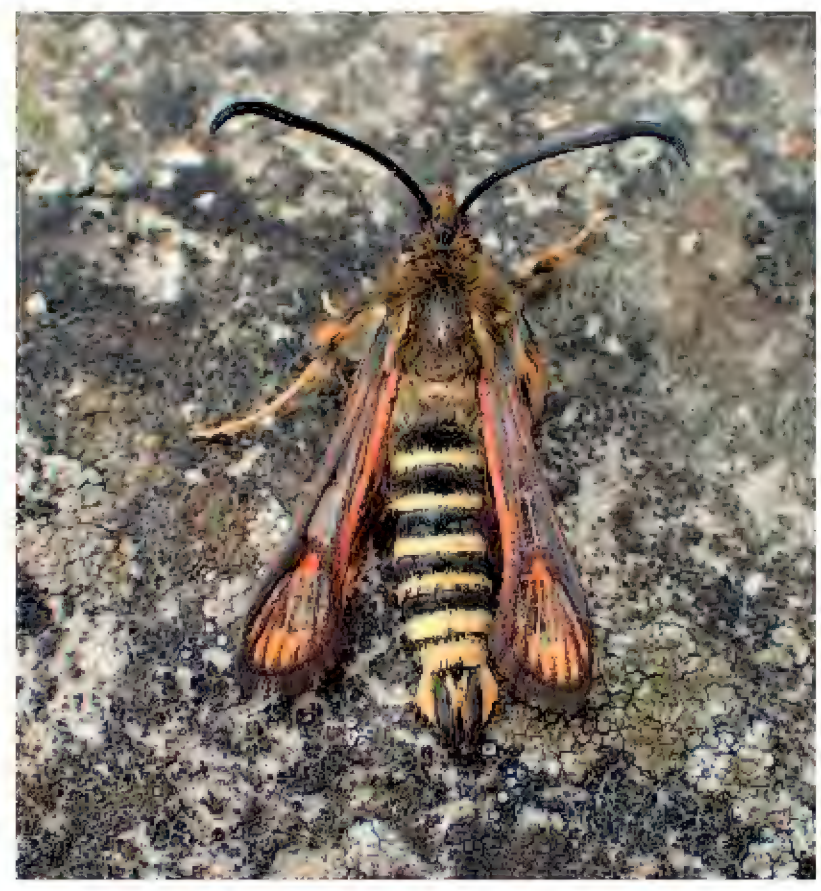

Figure 1d. Six-belted Clearwing *Bembecia ichneumoniformis.*

Images: Andy D. Nunn.

There is a small patch of Common Bird's-foot-trefoil in my garden but I was not confident about recording Six-belted Clearwing there and, indeed, despite numerous attempts I was unsuccessful. However, an opportunistic attempt at North Cave Wetlands, during a strategic family lunch break next to a large patch of Common Bird's-foot-trefoil, led to the capture of one on 11 July 2020 when I netted an individual approaching the lure (see figure 1d). I consider it unlikely that Six-belted Clearwing is resident in the Skidby area, as the land use is mainly arable, but locations with abundant Common Bird's-foot-trefoil, such as Flamborough Head, the Spurn area (e.g., Sammy's Point), nature reserves with wild flower meadows and brownfield sites, could support the species.

I also deployed a Large Red-belted Clearwing *Synanthedon culiciformis* pheromone lure in my garden on numerous occasions, as well as at North Cliffe Wood on 02 and 23 Jun 2020, and Skipwith Common on 20 July 2020, but without success. The lack of success in my garden was not unexpected as birch, the larval food plant, is uncommon in the area, with the nearest birch woodland approximately 15km away (at North Cliffe Wood). There are just four records of Large Red-belted Clearwing from two locations, most recently at Skipwith Common, in East Yorkshire. In hindsight, it was probably too late in the year when I visited Skipwith Common, as the main flight period of adults in Yorkshire is in May and June. Despite my failure to record Large Red-belted Clearwing at North Cliffe Wood there is still a chance that it occurs there and/or at Houghton Moor, as well as at Skipwith Common and Allerthorpe Common.

Although I failed to record Large Red-belted Clearwing at North Cliffe Wood, two *Triaxomera fulvimitrella* (Tineidae) were attracted to the lure on 2 June 2020. I was initially surprised by this, but subsequent enquiries revealed that other people had experienced the same and that a range of 'non-target' species can be attracted to pheromone lures. For example, the Anglian Lepidopterist Supplies website (https://www.angleps.com/pheromones.php), from where I purchased my pheromone lures and trap, states that Red-belted Clearwing can be attracted to the Large Red-belted Clearwing lure. Similarly, the Yellow-legged Clearwing lure can attract Orange-tailed Clearwing *Synanthedon andrenaeformis*, and the Currant Clearwing lure can attract White-barred Clearwing. Deploying pheromone lures can therefore be a worthwhile exercise even when the intended species is unlikely to be present, and would substantially improve our understanding of the status and distributions of clearwing moths in Yorkshire.

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The use of DNA metabarcoding in studying the diet of two lichenivorous moths

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Introduction

In the Yorkshire Dales the drystone walls provide an important habitat for the larvae of the Common Footman *Eilema lurideola* and Muslin Footman *Nudaria mundana* moths. Both species are commonly found living in the same walls and often on the undersides of the same stones. The caterpillars are reported as feeding on lichens and algae but those of the Common Footman have also been found on the leaves of hawthorn, Blackthorn, Traveller's Joy and bramble (Allan, 1949). Very little is known about their diets, whether they feed on specific lichen species or whether they are generalists that consume a wider range.

There are difficulties in studying the diet of these caterpillars as they are predominantly nocturnal and small, so making the detection of grazing damage and the identification of the lichens problematic. One possible solution is to use DNA metabarcoding in the analysis of their frass. Whilst the use of environmental DNA to determine the presence or absence of Great Crested Newts in ponds has become a reliable tool for ecologists and conservationists the use of metabarcoding for other survey work is still being developed (Tang *et al.*, 2018). One concern about its application to faecal samples was the potential damage to the DNA by the caterpillars' digestive system. However, a recent study (Rytkonen *et al.*, 2019) of the frass from the moth *Samia cynthia* successfully identified DNA from its food plant (*Betula* and *Prunus* species). Even so it was uncertain whether this technique would be equally successful with lichens.

Method

Caterpillars of the two species were collected in separate containers at twilight from the walls of Townhead Lane, Austwick between 12 May and 10 June 2019. They were released the next morning. The frass deposited in the containers was then stored until sufficient (200mg) material for DNA analysis had been collected. Thus it took nearly a month of daily collections to assemble the material. In total 130 Common and 226 Muslin Footman caterpillars were collected. The latter are smaller and produce less faecal material hence the difference in sample size. The frass was analysed by AllGenetics, a specialist genomics laboratory. The DNA was isolated and the metabarcoding libraries were prepared using primers to amplify the ITS2 genome region for fungi. The sequences were then compared against the UNITE reference database for taxonomic identification (AllGenetics). Unfortunately it is not possible to quantify the abundance of the food consumed from the DNA analysis in the present study. This is because the amplification and sequencing efficiency can vary among species. So the sequences detected may be depressed for some of the host species (Tang *et al.*, 2018).

Prior to the collection of the caterpillars the same wall was surveyed for lichens to enable a comparison to be made with the species identified from the DNA extracted from the frass.

Results

The DNA analysis retrieved a total of 537 unique ITS2 sequences or amplicon sequence variants which were assigned to 99 different fungal genera and 72 species. Of these 12 genera and 9 species were the fungal partners of lichens. The discrepancy between number of genera and species arises when a sequence was not found in the reference database. In other words not all fungal species have undergone DNA analysis and so the reference database is not comprehensive. Even when the species cannot be fully resolved, it is usually possible to assign the DNA sequence to the level of genus, based on the identity of the most similar reference sequences.

Table 1 is a summary of the genera and species of lichens identified in the frass of both moth species as well as other lichens found growing on the walls. There were four foliose lichens (*Parmelia*, *Phaeophyscia, Physcia* and *Xanthoria*) with the remainder being crustose. Three of the lichens were found only in the frass of the Common Footman and four were restricted to the Muslin Footman: the other five appeared in the faeces of both moth species. Thus they had similar but not identical diets. In an earlier survey of the lichens growing on a small section of the wall 15 species of lichens were identified but only two of these (*Xanthoria* and *Parmelia*) were identified in the caterpillar frass. Thus both moths did not feed on the full range of lichens available to them.

Table 1. The Lichens identified on the drystone wall and the DNA isolated from the frass of Muslin and Common Footman caterpillars. + indicates presence of DNA in caterpillar frass.

Lichen	Common Footman	Muslin Footman	**Lichen**	Common Footman	Muslin Footman
Acrocordia conoidea			*Lecanora polytropa*	+	
Aspicilia calcarea			*Lecidella*	+	+
Bacidia	+		*Parmelia*	+	+
Bacidia arnoldiana		+	*Parmelia saxatilis*		
Bacidia sulphurella		+	*Pertusaria*		
Caloplaca erenularia			*Phaeophyscia orbicularis*	+	
Caloplaca flavescens			*Physcia adscendens*		
Candelariella coralliza	+	+	*Ramalina farinacea*		
Candelariella vitellina			*Rhizcarpon geographicum*		
Cladonia pyxidata			*Scoliciosporum chlorococcum*	+	+
Collema			*Scoliciosporum umbrinum*	+	+
Lecanora gangaleoides			*Xanthoria*		
Lecanora hagenii		+	*Xanthoria parietina*		+

The results regarding the remaining fungal genera identified from the frass will be considered in a further paper.

Discussion

In Britain the majority of moth larvae (90%) feed on plants and mostly consume just a single or a few related species (Majerus, 2002). This predominance of specialist feeding habits over generalist host use is not reflected in the current study of the Common and Muslin Footman caterpillars. The DNA of 7 genera of lichens was detected in the frass of each species, although

not all genera were common to both moth species. However, because of the nature of the DNA analysis it is impossible to know whether those lichens detected formed a significant part of the diet or had been ingested as contaminant spores. What is more certain is that not all the lichens on the wall were detected in the frass. This implies an element of selectivity in their diets.

The 12 lichen taxa did not appear to share an obvious ecological connection. For example, some of the lichen species have a preference for damp calcareous rocks (*Bacidia arnoldiana* – Muslin Footman) whilst another prefers silica rich stone (*Lecanora polytropa* – Common Footman). The majority of lichens seem to be tolerant of any substrate pH or prefer nutrient enriched surfaces. The walls of Townhead Lane comprise limestone as well as acidic rock.

Some fungi have a close association with lichens: they range from saprotrophs, which colonise dead lichen thalli to parasites which obtain carbon and other nutrients from the lichen host (Lawrey & Diederich, 2003). The DNA of three genera from these fungal types was isolated from the caterpillar frass: *Cladophialophora*, *Tolypocladium* and *Vishniacozyma*. Although six species of *Cladophialophora* were present only one could be identified with certainty, *C. parameliae*. This is reported to be associated with *Parmelia*, *Lobaria* and *Pannaria* lichens. *Parmelia* was found in the faeces of both moths and likewise *C. parameliae* was also found in the two caterpillar species. The other two genera of fungi were also found in the frass of both moth species. In the case of *Tolypocladium*, species have been reported to be parasites of other fungi as well as being insect pathogens. *Vichniacozyma victoriae* has been isolated from mosses, lichens and soil. In all these cases very little is known about the relationship between the fungi and its host.

There are about 700 species of fungi known to be entomopathogenic. In the analysis the DNA of two genera was isolated: *Beauveria* and *Lecanicillium*. The former was limited to the Common Footman whilst the latter was found only in the Muslin Footman frass. The mode of infection is not known but the spores somehow invade the body of the caterpillar and consume the internal organs. Although not forming part of the diet of the caterpillars it is evident that the DNA of these pathogens was present.

Although some yeasts feed on decomposing material there have been a few studies investigating their presence in the gut flora of insects. Such associations are poorly understood, though it has been suggested that some of these yeasts produce hydrolytic enzymes which break down toxins produced by other fungi (Spooner & Roberts, 2005). The yeasts identified as endosymbionts include genera of the Saccharomycetes. From the DNA analysis three genera were isolated, of which *Candida* and *Blastobotrys* were solely associated with the Common Footman and *Debaryomyces* with the Muslin Footman.

Compared to higher plants the nutritional quality of lichens is often relatively poor, as indicated by nitrogen content as an assessment of protein. This may be balanced by host availability in that the lichens do not die-back over winter. The lichens defence against grazing is mainly based on the presence of secondary chemicals which are toxic or at least unpalatable to the caterpillars. The only physical characteristic to prevent grazing is the toughness of the cortex in a dry state.

The caterpillars either have to avoid feeding on the lichen species or tissues containing harmful quantities of the secondary chemicals, or be able to detoxify them. The chemicals are secreted by the fungal partner and are deposited mainly in the fungal hyphae. Hesbacher *et al.* (1995) reported that the Scarce Footman *Eilema complanum* larvae fed on the cortical and algal layers of *Cladonia pyxidata*. Similarly, Poykko (2005) concluded that the algal layer of the four lichen species he studied was the essential part of the thallus for caterpillar nutrition. And yet in Hesbacher's study secondary chemicals were found in the caterpillar bodies. Likewise, Poykko found that some of the secondary metabolites were highly toxic to the young larvae. In fact all the larvae reared on *Vulpicida pinastri* (containing vulpinic or usnic acid) and *Hypogymnia physodes* (physodic acids) died during the experiments.

Poykko's investigation also involved feeding Common Footman on four species of lichens, recording quantities consumed. Where the *Eilema* species were allowed to select their lichen food all preferred *Melanelia exasperata* followed by *Xanthoria parietina*. Analysis showed that the former had the highest nitrogen content and was thus the most nutritious. Also, this lichen does not contain polyphenolic secondary substances. Parietin, which occurs in *X. parietina*, had no impact on the survival or growth rate of the larvae. In the case of Common Footman the larvae consumed approximately 100mg (dry weight) of *M. exasperata*, 45mg of *X. parietina* as well as 25mg of *H. physodes* and 15mg of *V. pinastri*. Thus the caterpillars preferred the most nutritious lichen and yet also consumed smaller quantities of lichens containing harmful chemicals.

Further investigation of the secondary chemicals found in the lichen species identified in the current study, and their toxicity, may provide insights into the similarity and differences in the diet of the Common and Muslin Footman larvae. Also further work on the endosymbionts identified may provide a possible mechanism for the detoxification of these secondary compounds (Krieger et al, 1971). In addition, the distribution of lichen species on walls in the Yorkshire Dales may provide clues as to the extent of these caterpillars reported in an earlier study (Pearson, 2020).

Conclusions

The metabarcoding and DNA analysis detected 12 lichen genera in the caterpillar frass which suggests that the larvae are polyphagous. A further 13 lichen genera were available as food, living on the wall, whose DNA was not found in the caterpillar faeces. This is evidence that both the Common and Muslin Footman moths are also selective feeders and do not consume all the lichens available to them.

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Yorkshire Auchenorrhyncha Part 4, Cicadomorpha – Membracoidea: Cicadellidae – Typhlocybinae (leafhoppers)

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Introduction

The Typhlocybinae is a large subfamily within the Cicadellidae. In Britain there are 102 recorded species representing 5 tribes; at present 85 of these are recorded from Yorkshire. They are all phytophagous and, although some species cause leaf damage when feeding, none are agricultural or horticultural pests in Britain. Overall the number of records held by the YNU is insufficient to truly represent current distribution and status.

The following list is the fourth and final part which represents all currently recorded Yorkshire Auchenorrhyncha together with associated vice counties, statuses, hosts and years for the first and latest records. The host data are indicative only as some overwinter as adults on evergreen plants, shrubs and trees, while continental food plants may differ from British records, and some are polyphytophagus. Many species can only be identified by dissection of male specimens. Consequently, where the female cannot be reliably identified or where specimens are unavailable for examination, such records are indicative only and may not have been validated. Several historic records fall into this group.

The status convention is based on: 1 to 9 records = Rare; 10 to 24 = Scarce; 25 to 49 = Uncommon; 50 to 99 = Frequent; 100 to 199 = Common; 200 or more = Very Common.

Common names are used for host plants with their associated scientific names only appearing at the first instance in this and previous parts.

The taxonomy of European Auchenorrhyncha is relatively well documented for many countries, however there are currently no published unified keys for identification or a comprehensive checklist of European species. The references below have been used in compiling this paper and would assist in the identification of specimens.

Infraorder: Cicadamorpha
Superfamily: Membracoidea
Family: CICADELLIDAE Latreille, 1817
Subfamily: TYPHLOCYBINAE Kirschbaum, 1868
Tribe: ALEBRINI McAtee, 1926
Alebra albostriella (Fallén, 1826) (see Fig. 1, p205)
VC61, VC62, VC63, VC64, VC65: frequent, oaks, 1922-2017.
Alebra coryli Le Quesne, 1977
VC61, VC63: rare, Hazel, 2015-2017, 2 records.
Alebra wahlbergi (Boheman, 1845)
VC61, VC63, VC64, VC65: uncommon, deciduous trees, 1954-2016.

Tribe: DIKRANEURINI McAtee, 1926
Dikraneura variata Hardy, 1850
VC61, VC62, VC63, VC64, VC65: frequent, grasses, 1922-2016.
Emelyanoviana contraria (Ribaut, 1936)
VC63, VC64: rare, Rock Rose, 1976-2003, 2 records.
Emelyanoviana mollicula (Boheman, 1845)
VC62, VC63, VC64, VC65: scarce, Betony *Betonica officinalis*, 1922-1999.
Forcipata citrinella (Zetterstedt, 1828)
VC62, VC63, VC64: rare, sedges and grasses, 1926-2005.
Notus flavipennis (Zetterstedt, 1828) (see Fig.2, p205)
VC61, VC62, VC63, VC64, VC65: uncommon, sedges, 1922-2013.

Tribe: EMPOASCINI Distant, 1908
Empoasca decipiens Paoli, 1930
VC61, VC62, VC63, VC64: frequent, hedgerow plants and shrubs, 1933-2013.
Empoasca pteridis (Dahlbom, 1850)
VC63: rare, polyphagus, 1990-2006.
Empoasca vitis (Göthe, 1875)
VC61, VC62, VC63, VC64, VC65: frequent, trees and bushes, 1923-2016.
Kybos calyculus (Cerutti, 1939)
VC63: rare, Silver Birch, 1978, single specimen.
Kybos ludus (Davidson & De Long, 1938)
VC61, VC62, VC63, VC64: scarce, Silver Birch, 1958-2015.
Kybos populi (Edwards, 1908)
VC61, VC62, VC63, VC64: scarce, poplars, 1937-2018.
Kybos rufescens (Melichar, 1896)

VC61, VC63, VC64, VC65: scarce, Purple Osier, 1922-2006.

Kybos smaragdula (Fallén, 1806)

VC61, VC62, VC63, VC64: uncommon, Alder, 1922-2017.

Kybos virgator (Ribaut, 1933)

VC61, VC63, VC64: uncommon, willows, 1959-2018.

Figure 1 (above). *Alebra albostriella* (see p204)

Figure 2 (top right). *Notus flavipennis* (see p204)

Figure 3 (right). *Aguriahana stellutata* (see p206)

Tribe: ERYTHRONEURINI Young, 1952

Alnetoidea alneti (Dahlbom, 1850)

VC61, VC62, VC63, VC64, VC65: frequent, deciduous trees, 1927-2016.

Arboridia parvula (Boheman, 1845)

VC61: rare, low plants on calcareous soils and fenland, 1922, single record.

Arboridia ribauti (Ossiannilsson, 1937)

VC63: rare, oaks, 2002-2005, 3 records.

Hauptidia moroccana (Melichar, 1907)

VC61, VC62, VC63: scarce, Foxglove *Digitalis purpurea*, 1938-2018.

Zygina angusta Lethierry, 1874

VC61, VC62, VC63, VC64: uncommon, trees and shrubs, 1925-2004.

Zygina flammigera (Geoffroy in Fourcroy, 1785)

VC61, VC62, VC63, VC64: scarce, trees and shrubs, 1936-2018.

Zygina hyperici (Herrich-Schaeffer, 1836)

VC63: rare, St John's-wort *Hypericum perforatum*, 2001, single record.

Zygina ordinaria (Ribaut, 1936)

VC61, VC63: rare,Hawthorn *Crataegus monogyna,* oaks, willows and Sloe, 1986-2013.

Zygina schneideri (Günthart, 1974)

VC634: rare, Hawthorn, Small Leaved Elm *Ulmus minor*, Dog Rose *Rosa canina*, 1989-2003.

Zygina suavis Rey, 1891

VC64: rare, Buckthorn *Rhamnus catharticus* and Alder Buckthorn *Frangula alnus*, 1953-1961, 2 records.

Zygina tiliae (Geoffroy in Fourcroy, 1785)

VC62, VC63: rare, Alder, Small Leaved Lime and oaks, 1937-2006.

Zyginidia scutellaris (Herrich-Schaeffer, 1838)

VC61, VC62, VC63, VC64: common, grasses, 1935-2018.

Tribe: TYPHLOCYBINI Oudemans, 1897

Aguriahana stellulata (Burmeister, 1841) (see Fig. 3, p205)

VC63: scarce, Small Leaved Lime, 1975-2000.

Edwardsiana alnicola (Edwards, 1924)

VC64: rare, Alder, 1987, single record.

Edwardsiana avellanae (Edwards, 1888)

VC61, VC62, VC63, VC64, VC65: scarce, Hazel, 1927-2015.

Edwardsiana bergmani (Tullgren, 1916)

VC63: rare, Silver Birch, 1987-1989, 2 records.

Edwardsiana candidula (Kirschbaum, 1868)

VC61, VC63: rare, White Poplar, 2015-2016.

Edwardsiana crataegi (Douglas, 1876)

VC61, VC62, VC63, VC64: uncommon, Hawthorn, 1930-2017.

Edwardsiana flavescens (Fabricius, 1794)

VC63, VC64: rare, Hornbeam and Beech, 1959-2014.

Edwardsiana frustrator (Edwards, 1908)

VC61, VC62, VC63, VC64: scarce, deciduous trees, 1937-2018.

Edwardsiana geometrica (Schrank, 1801)

VC61, VC62, VC63, VC64, VC65: uncommon, Alder, 1923-2016.

Edwardsiana lethierryi (Edwards, 1888)

VC61, VC63: rare, Field Maple and limes, 1988-2000, some dubious records, see Wilson & Claridge (1999).

Edwardsiana nigroloba (Edwards, 1924)

VC61, VC62, VC63: scarce, Sycamore, 1986-2016.

Edwardsiana plebeja (Edwards, 1914)

VC63: rare, deciduous trees, 1937-1976, 2 records.

Edwardsiana plurispinosa (W. Wagner, 1935)

VC63: rare, Alder and Hazel, 1987-2015.

Edwardsiana prunicola (Edwards, 1914)

VC61,VC63, VC64: scarce, Sloe, 1988-2018.

Edwardsiana rosae (Linnaeus, 1758)

VC61, VC62, VC63, VC64: uncommon, roses and deciduous trees, 1923-2014.

Edwardsiana salicicola (Edwards, 1885)

VC61, VC62, VC63: scarce, willows, 1937-2006.

Edwardsiana spinigera (Edwards, 1924)
VC63: rare, Alder and Hazel, 2000, single record.
Edwardsiana tersa (Edwards, 1914)
VC63, VC64: rare, wilows, 1959-1990.
Edwardsiana ulmiphagus (Wilson & Claridge, 1999)
VC61, VC63: rare, elms, 1987-2007.
Eupterycyba jucunda (Herrich-Schaeffer, 1837)
VC61, VC62, VC63, VC64: uncommon, Alder, 1952-2017.
Eupteryx artemisiae (Kirschbaum, 1868)
VC61, VC63: scarce, Southernwood *Artemisia abrotanum*, 1952-2005.
Eupteryx atropunctata (Goeze, 1778)
VC61, VC62, VC63, VC64, VC65: uncommon, Sage *Salvia officinalis* and mallows, 1922-2016.
Eupteryx aurata (Linnaeus, 1758)
VC61, VC62, VC63, VC64, VC65: common, Nettle and mints, 1922-2017.
Eupteryx cyclops Matsumura, 1906
VC61, VC62, VC63, VC64, VC65: scarce, Nettle, 1937-1989.
Eupteryx decemnotata Rey, 1891
VC61, VC63: rare, Sage, 2016-2018.
Eupteryx filicum (Newman, 1853)
VC61, VC63: rare, ferns, 2001-2014.
Eupteryx florida Ribaut, 1936
VC61, VC62, VC63, VC64: uncommon, Labiates, 1924-2014.
Eupteryx melissae Curtis, 1837
VC61, VC63: scarce, Labiates, 1984-2018.
Eupteryx notata Curtis, 1837
VC61, VC62, VC63, VC64, VC65: uncommon, low calcareous vegetation, 1935-2018.
Eupteryx origani Zakhvatkin, 1948
VC61, VC63, VC64: rare, Oregano *Origanum vulgare*, 1974-2014, 3 records.
Eupteryx signatipennis (Boheman, 1847)
VC61, VC62, VC63, VC64, VC65: uncommon, Meadow-sweet, 1922-2016.
Eupteryx stachydearum (Hardy, 1850)
VC61, VC62, VC63, VC64, VC65: frequent, Labiates, 1922-2017.
Eupteryx tenella (Fallén, 1806)
VC62, VC63: rare, Yarrow *Achillea millefolium*, 1937-2001.
Eupteryx thoulessi Edwards, 1926
VC61, VC63: rare, Water Mint *Mentha aquatica*, 1982-2016.
Eupteryx urticae (Fabricius, 1803)
VC61, VC62, VC63, VC64, VC65: common, Nettle, 1922-2017.
Eupteryx vittata (Linnaeus, 1758)
VC61, VC62, VC63, VC64: uncommon, Ground Ivy *Glechoma hederacea* and Creeping Buttercup *Ranunculus repens*, 1931-2017.
Eurhadina concinna (Germar, 1831)
VC61, VC62, VC63, VC64, VC65: uncommon, oaks, 1922-2017.
Eurhadina kirschbaumi Wagner, 1937
VC61: rare, oaks, 1979, single record.
Eurhadina loewii (Then, 1866)
VC61, VC63, VC64: rare, Sycamore, 1953-1989.
Eurhadina pulchella (Fallén, 1806)

VC61, VC62, VC63, VC64, VC65: uncommon, oaks, 1921-2016.

Eurhadina ribauti Wagner, 1935

VC61, VC63: rare, Alder, Small Leaved Elm and oaks, 1987-2018.

Fagocyba carri (Edwards, 1914)

VC61, VC62, VC63, VC64: scarce, oaks, 1936-2016.

Fagocyba cruenta (Herrich-Schaeffer, 1838)

VC61, VC62, VC63, VC64: frequent, deciduous trees, 1923-2016.

Lindbergina aurovittata Dlabola, 1958

VC61, VC63: rare, oaks and brambles, 2002-2018.

Linnavuoriana decempunctata (Fallén, 1806)

VC61, VC62, VC63, VC64: scarce, Silver Birch, 1937-2017.

Linnavuoriana sexmaculata (Hardy, 1850)

VC61, VC62, VC63, VC64: uncommon, willows, 1924-2018.

Ossiannilssonola callosa (Then, 1886)

VC61, VC62, VC63, VC64: scarce, Sycamore, 1982-2016.

Ribautiana cruciata (Ribaut, 1931)

VC61, VC63: rare, mixed hedgerows, 1984-2007.

Ribautiana debilis (Douglas, 1876)

VC61, VC62, VC63: rare, trees and shrubs, 1937-2003.

Ribautiana scalaris (Ribaut, 1931)

VC63, VC64: rare, oaks, 1953-1987, 2 records.

Ribautiana tenerrima (Herrich-Schaeffer, 1834)

VC61, VC62, VC63, VC64: uncommon, brambles, 1922-2015.

Ribautiana ulmi (Linnaeus, 1758)

VC61, VC62, VC63, VC64, VC65: frequent, Elm, 1922-2016.

Typhlocyba quercus (Fabricius, 1777)

VC61, VC62, VC63, VC64, VC65: uncommon, oaks, 1922-2016.

Wagneripteryx germari (Zetterstedt, 1838)

VC62, VC63: rare, pines, 1926-1991, 2 records.

Zonocyba bifasciata (Boheman, 1850)

VC61, VC62, VC63, VC64, VC65: uncommon, Elm, 1937-2016.

Zyginella pulchra P. Löw, 1885

VC63: rare: Sycamore, 2015-2016.

Taxonomic Changes since Le Quesne & Payne (1981) and adopted herein:

Aguriahana germari (Zetterstedt, 1838) is now *Wagneripteryx germari* (Zetterstedt, 1838).

Edwardsiana plurispinosa (W. Wagner, 1935) is new to British list due to taxonomic review.

Edwardsiana ulmiphagus (Wilson & Claridge, 1999) is new to British list due to taxonomic review.

Eupteryx decemnotata Rey, 1891 new to Britain.

Kybos betulicola (Wagner, 1955) is now *Kybos ludus* (Davidson & De Long, 1938).

Typhlocyba bifasciata Boheman, 1850 is now *Zonocyba bifasciata* (Boheman, 1850).

Zyginella pulchra P. Löw, 1885 is new to Britain.

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A list of some British species and selected photographs can be viewed at: https://www.britishbugs.org.uk/gallery.html

YNU Bryological Section: Report for 2019

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Excursions

Two sectional meetings were held in 2019 and are reported below. Nomenclature follows the current British Checklist and Census Catalogue (Hill *et al.*, 2008).

Spring meeting, Sulber Nick and Thieves Moss (VC64) 4 May 2019

The area around Thieves Moss to the north of Moughton Scars offers an interesting contrast between limestone rocks and grassland on the one hand and mires and flushes on the other. We approached the area from Horton-in-Ribblesdale, recording on the limestone slopes near the eastern end of Sulber Nick. Large common mosses of this habitat were much in evidence, including *Ctenidium molluscum*, *Ditrichum gracile*, *Homalothecium lutescens*, *Neckera crispa*, *Racomitrium lanuginosum* and *Rhytidiadelphus triquetrus*. There were some very fine stands of *Breutelia chrysocoma* in places and a few patches of *Frullania tamarisci* in the turf. *Climacium dendroides*, *Loeskeobryum brevirostre* and *Sanionia uncinata* were also present but very sparse. In recesses among the rocks there were small amounts of *Leiocolea collaris*, *Preissia quadrata* and *Scapania aspera*. A dried-out hollow with soil that was clearly somewhat acidic had a little *Bryum subapiculatum* and *Pleuridium acuminatum* on the bare mud.

We proceeded towards Thieves Moss along the base of the limestone scar south of Sulber Nick. The main interest here is in the flushes that emerge at the base of the rocks. *Palustriella falcata* and *Scorpidum cossonii* were frequent with occasional *Aneura pinguis*, *Campylium stellatum* and *Gymnostomum aeruginosum*. *Schistidium robustum* was present on boulders. However, much the most significant find here was *Amblyodon dealbatus* on a stone in one of the flushes, with very immature capsules. It is a very scarce moss nationally, occurring on wet calcareous rocks and flushes in the uplands but also at a few coastal sites in dune slacks. In VC64 it has been recorded from a number of sites, mostly around Malham and Ingleborough, but there are rather few recent records and apparently none previously from the vicinity of Thieves Moss. We eventually reached the Moss itself, where accumulated peat supports boggy vegetation including *Aulacomnium palustre*, *Sphagnum papillosum*, *S. capillifolium*, *S. subnitens* and *S. inundatum*. *Polytrichum strictum* was common, forming conspicuous hummocks intermixed with various species of *Sphagnum*, *Aulacomnium* and other mosses. The adjacent seepages and *Schoenus* flushes had plentiful *Scorpidium scorpioides* and *S. cossonii* with occasional *Campylium stellatum* and *Sarmentypnum exannulatum*. One flush had *Philonotis calcarea* and *Plagiomnium elatum*. Our return route took us along Sulber Nick, where a few additions were noted, including a further patch of *Loeskeobryum brevirostre*. Another dried-out hollow had some puzzling juvenile *Polytrichum* on bare mud, resembling *P. longisetum* but actually turning out to be *P. commune*. The final tally of species for the day was 92.

Autumn meeting, Battersby Crag (VC62) 28 September 2019

Four members attended this meeting at Battersby Crag. The venue was chosen randomly, being in an area that the bryological section had not visited in recent years, although it was also of interest as the sole reported locality for the moss *Plagiopus oederianus* in the vice-county. This record is a very old one, by W. Mudd on 'rocks near Battersby', first published in Baker & Nowell (1854), and it has never been refound.

We began by recording along the lower track in Battersby Plantation in monad NZ5906. At first the flora was not very rich, until we reached a small stream gully. Here Ambroise Baker spotted the very small but distinctive moss *Campylostelium saxicola* on a small sandstone rock in the stream, accompanied by the even smaller *Brachydontium trichodes*. Both, but particularly the *Campylostelium*, are very scarce mosses of moist siliceous rocks, the latter being mapped for only 11 post-1990 hectads in the National Atlas (Blockeel *et al.,* 2014). Several patches of it were found after the initial discovery and *Fissidens pusillus* was also present on rocks in the stream. There was little else that was unusual in the Plantation. A patch of *Dicranum majus* was seen on the top of a boulder. Bare ground at the edge of an old excavated pond near the forestry track produced a little *Ditrichum heteromallum* and *Pogonatum urnigerum*; the track itself was slightly base-rich and had much *Didymodon fallax* on its bare parts. Epiphytes were surprisingly poor and we saw only isolated patches of *Frullania dilatata*, *Metzgeria furcata* and *Radula complanata* and a little *Orthotrichum pulchellum* and *Ulota bruchii*.

In the afternoon we climbed to Battersby Crag at its north-eastern end and recorded in monad NZ6006. En route *Dicranella cerviculata* was noted on peaty soil and *Sphagnum girgensohnii* in a gully. The boggy mire in the basin below the crag was markedly acidic and had *Straminergon stramineum* in unusually large quantity and some good patches of *Sarmentypnum exannulatum* at the south-western end. *Sphagnum papillosum* was present, while *S. squarrosum* and *S. russowii* were recorded on the nearby slopes. Parts of the crag are very wet and it was strange to

see Bog Asphodel *Narthecium ossifragum* growing in dense hanging mats on the vertical rocks. The presence of *Sphagnum denticulatum* and *Nardia compressa* indicated very acid conditions and we were surprised to see rosettes of Butterwort *Pinguicula vulgaris* on the wet surfaces. *Aneura pinguis* was common, with occasional *Riccardia multifida* and fertile *Hookeria lucens* occurring in wet niches sheltered by sallows. A few patches of *Blindia acuta* were present. *Tetrodontium brownianum* was plentiful on the moist sandstone, in places growing downwards from the under-surface of the rocks, and a further fine colony of *Brachydontium trichodes* was located on a detached piece of rock. A notable find was the tiny liverwort *Hygrobiella laxifolia* on wet rocks at the foot of the crag. A tuft of *Ulota* spotted by Steven Heathcote on a sallow turned out to be *U. calvescens*, a new record for the vice-county. On our ascent to the moorland above the crags we found a little *Campylium stellatum* in a seepage. Finally, as we re-entered the woods, a small oak tree produced the best crop of epiphytes for the day, including a tuft of *Orthotrichum speciosum*, the first record in the vice-county since 1843!

All the habitat explored was completely unsuitable for the calcicolous *Plagiopus oederianus* and Mudd's 19th century record from this area is hardly credible and should be disregarded. We recorded 62 and 80 species respectively in the two monads and a combined total of 103 for the day.

The year's records

The number of records received for 2019 from each of the Watsonian vice-counties is shown below.

Vice-county	Records received
61	28
62	250
63	622
64	686
65	2

The year was relatively quiet compared with 2018, when the British Bryological Society held a highly successful meeting in Swaledale. Gordon Haycock has continued to record in Wharfedale and Steven Heathcote has made interesting records in the southern and eastern parts of Yorkshire. Steven's records include a new population of *Dicranum polysetum* on the Northern Goole Moors. This moss has other recent records from Thorne Moors but is very rare in Yorkshire and very scarce nationally. Ambroise Baker's record of *Tortella flavovirens* at South Gare (Teesside) is also notable; it is a maritime moss in Britain whose only previous Yorkshire records were from Filey Brigg and Spurn Point in VC61.

Sphagnum compactum seems to be very rare in the South Pennines, so Paul Ardron's record from Rivelin near Sheffield is of great interest. The only other recent record from VC63 is from Thorne Moors. It's unclear whether its presence at Rivelin is evidence of re-colonisation or represents a relict population. Also of interest in VC63 is *Racomitrium ericoides*, recorded on a gritstone wall during a meeting of the North-Western Naturalists in October in the segment

of the vice-county that extends into the Saddleworth area. This is the third VC63 record for this moss and, curiously, all have been from gritstone walls. This is not a normal habitat for *R. ericoides*, which more often grows on open gravelly ground.

Peter Cook collected *Leptobarbula berica* at Roos Church in VC61. This is a difficult moss to identify, being primarily a Mediterranean species and normally without capsules in Britain. Many records are thought to be mis-identifications but the specimen from Roos is convincing. Steven Heathcote has also collected probable *Leptobarbula* from Brockadale, but further material is needed to confirm the record.

The list below provides details of these and other selected records, including all new vice-county records and updates to the national Census Catalogue (identified by an asterisk). The vice-county is given in brackets before each individual record. Thanks are due to all the contributors of records.

Andreaea rupestris: (64) SD94057358 Moor End Fell, Wharfedale, G. Haycock, 18 June 2019; (64) SD92067640 Birks Fell, Upper Wharfedale, G. Haycock, 5 June 2019. New sites for this rock-moss, which is rather rare on the Millstone Grit.

Brachythecium mildeanum: (62*) SE6050 thin soil on old concrete, York cemetery, T.L. Blockeel, 29 May 2019. At one time this moss was primarily a plant of grassy vegetation in wet ground but in recent years it has become widespread in drier, ruderal habitats.

Campyliadelphus chrysophyllus: (62) SE68266895 calcareous grassland soil by small landslip, Birkdale Farm, Mowthorpe, S.J. Heathcote, 10 February 2019. A new hectad for this species in the Howardian hills.

Cinclidotus fontinaloides: (61*) SE6048 on stonework of small jetty and on roots of willow, R. Ouse, Fulford Ings, York, T.L. Blockeel, 29 May 2019. Although a common moss in Yorkshire's rivers it becomes rare in their lower reaches and apparently had not been recorded in VC61 since 1951.

Dichodontium pellucidum: (61*) SE6048 on small sandstone boulder on river bank, R. Ouse, Fulford Ings, York, T.L. Blockeel, 29 May 2019. A common moss in the uplands, mostly on base-poor rocks, it is therefore not surprising that it was unknown hitherto in VC61.

Dicranum polysetum: (63) SE7256419136 on peaty soil of dwarfed Downy Birch *Betula pubescens* hummock, Northern Goole Moors, S.J. Heathcote, 15 November 2019.

Lejeunea lamacerina: (64) SE19894975 Farnley Moor, G. Haycock, 21 August 2019.

Leptobarbula berica: (61) TA290296 west-facing riser of sandstone stairway and north-facing stonework, presumed ashlar, Roos church, P.J. Cook, 10 November 2019.

Mylia taylorii: (64) SE084599 Lord's Seat, Barden Fell, G. Haycock, 17 August 2019. A new hectad for this large, striking liverwort of humid hollows among gritstone rocks.

Orthotrichum speciosum: (62*) NZ596060 on branch of young oak, Battersby Plantation, T.L. Blockeel, 28 September 2019.

Orthotrichum sprucei: (61) SE6048 silty soil on lower part of willow, R. Ouse, Fulford Ings, York, T.L. Blockeel, 29 May 2019. Still present by the Ouse, where it was reported to be frequent on trees and shrubs on the bank of the river by Richard Spruce as early as 1845.

Plagiothecium denticulatum* var. *denticulatum: (63) SE0621 on rocks exposed near base of stream bank and SE0622 on exposed, shaded tree roots, both Norland Moor S.J. Heathcote, 21 March 2019. A strong calcifuge, this moss has become less common in recent years, having probably benefitted from acid deposition during the 20th century.

Polytrichum strictum: (63) SE0583721621 and SE0582721765 single hummocks in wet heath, Norland Moor, S.J. Heathcote, 21 March 2019. There are very few records of this species of

peaty habitats in VC63, though it may be overlooked.

Racomitrium ericoides: (63) SD993062 on wall-top, Dobcross, J. Lowell & NW Naturalists, 19 October 2019.

Scorpidium revolvens: (64) SE0658 Howgill, Bolton Abbey Estate, G. Haycock, 17 August 2019; (64) SD97547433 Fears Gill Beck near Kettlewell, G. Haycock, 26 May 2019.

Sphagnum compactum: (63) SK260871 Rivelin, P. Ardron, 16 January 2019.

Sphagnum inundatum: (63) SK2523193094 and SK25239310 flushed slopes, Agden Bog NR, S.J. Heathcote, 3 November 2019.

Splachnum ampullaceum: (65) SD815948 on scat, Abbotside Common, Upper Wensleydale, G. Haycock, 25 May 2019. A welcome record of this dung moss which is in decline in many areas.

Tetraplodon mnioides: (64) SE08146451 Northside Moss, Grimwith Moor, G. Haycock, 27 August 2019; (65) SD815948 on scat, Abbotside Common, Upper Wensleydale, G. Haycock, 25 May 2019.

Tortella flavovirens: (62*) NZ52 South Gare, A. Baker, 16 June 2019.

Tortula lanceola: (63) SE51291715 Trampled soil at top of limestone cliff, Brockadale NR (co. 14c), S.J. Heathcote, 7 March 2019. The specimen is sterile but matches *T. lanceola* well on vegetative characters. It is very rare in VC63, growing on bare calcareous soil.

Ulota calvescens: (62*) NZ604064 on sallow at base of crag, Battersby Crag, S.J. Heathcote, 28 September 2019.

References

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Hill M.O., Blackstock T.H., Long D.G. & Rothero, G.P. (2008) *A checklist and census catalogue of British and Irish bryophyte, updated 2008.* British Bryological Society: Middlewich.

Yorkshire Ichneumons: Part 12

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Introduction

Yorkshire statuses are taken from the chart shown on the YNU website:
www.ynu.org.uk/insects/parasitic_wasps

† = new county record
* = new vice-county record

Subfamily **PIMPLINAE**

Additions to Ely, 2013a:

Tribe ***Ephialtini***

Ephialtes manifestator (Linnaeus, 1758). Scarce in Yorkshire.

*VC62: Southfield Farm, Kirkby Moorside 16.6.2020 S.Newton.

Dolichomitus imperator (Kriechbaumer, 1854). New to Yorkshire.

†VC63: Carr Lodge, Doncaster 21.7.2019 A.R.Godfrey.

Scambus calobatus (Gravenhorst, 1829). Scarce in Yorkshire.
*VC62: Ravenscar 21.9.2019 G.Featherstone.
Gregopimpla inquisitor (Scopoli, 1763). Scarce in Yorkshire.
*VC62: Blackdale Howl Wood, Duncombe Park 14-21.6.2019 J.O.H.Small.
Dreisbachia pictifrons (Thomson,1877). Rare in Yorkshire.
*VC61: Harrop's Plantation, Escrick Park 3-10.6.2003 S.E.M.Fraser.
Polysphincta vexator Fitton, Shaw & Gauld, 1988. Rare in Yorkshire.
*VC63: Lindholme Hall 27.9.2019 D.Williamson.

Additions to Ely, 2014a:
Tribe ***Pimplinae***
Pimpla spuria Gravenhorst, 1829. Rare in Yorkshire.
*VC61: Hollow Swang, Skipwith Common NNR 15-23.7.2018 J.O.H.Small.
Tribe ***Delomeristini***
Perithous septemcinctorius (Thunberg, 1822). Rare in Yorkshire.
*VC62: Terrace Bank Wood spur, Duncombe Park 18-29.7.2019 J.O.H.Small.

Subfamily **POEMINIINAE**

Additions to Ely, 2014a***:***
Poemia collaris Haupt, 1917. Scarce in Yorkshire.
*VC62: Terrace Bank Wood, Duncombe Park 18-29.7.2019 J.O.H.Small.

Subfamily **TRYPHONINAE**

Additions and corrections to Ely, 2015a***:***
Eridolius basalis (Stephens, 1835). The VC65 record was in fact from VC64!
*VC65: Druid's Plantation, Masham 28.6.1981 W.A.Ely.
Ctenochira haemosterna (Haliday, 1838). Scarce in Yorkshire.
*VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.
Cosmoconus hinzi Kasparyan, 1971. **New to Britain.**
*VC64: Hollins Hill, Baildon 28-31.8.2017 H.N.Whiteley.
†VC65: Barth Bridge Sedburgh 29.9.2012 W.A.Ely.
Cteniscus nigrifrons (Thomson, 1883). New to Yorkshire.
†VC61: North Cave Wetlands YWT NR 24.6.2013 R.Crossley.

Subfamily **XORIDINAE**

Additions to Ely, 2015b:
Ischnoceros caligatus (Gravenhorst, 1829). Rare in Yorkshire.
*VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.
Xorides niger (Pfeffer, 1913). New to Yorkshire.
†VC63: Carr Lodge 21.7.2019 A.R.Godfrey.

Subfamily **PHYGADEUONTINAE**

Additions to Ely, 2015b:
Tribe ***Gelini***
Acrolyta nigricolor (Aubert, 1980). **New to Britain**.
†VC61: Rush Wood, Naburn + Grimstone Wood, Clock Farm, Dunnington Common 8-15.7.2003 S.E.M.Fraser.
Cremnodes atricapillus (Gravenhorst, 1815). Rare in Yorkshire.

*VC62: Scarborough near Castle 28.5.2011 A.Norris,R.S.Key.

Gelis cayennator (Thunberg, 1824). Scarce in Yorkshire.

*VC61: Park Wood, Ross Moor 5-12.8.2003 S.E.M.Fraser.

Gelis cinctus (Linnaeus, 1758). Rare in Yorkshire.

*VC63: Carlyle Road, Maltby 2.6.1974 W.A.Ely.

Gelis discedens (Förster, 1850). Rare in Yorkshire.

*VC62: Great Lake, Castle Howard 9.7.1988 W.A.Ely.

Gelis proximus (Förster, 1850). Uncommon in Yorkshire.

*VC65: Freeholders' Wood, Aysgarth 5.10.1985 W.A.Ely.

Rhembobius perscrutator (Thunberg, 1824). Rare in Yorkshire.

*VC63: Coniston Avenue, Dalton 10.6.2018 G.Boyd.

*VC65: Hag Wood, Richmond 4.10.1985 I.F.G.McLean.

Glyphicnemis clypealis (Thomson, 1883). Rare in Yorkshire.

*VC64: drain near Drax Abbey Farm 23.7.1987 W.A.Ely.

Endasys brevis (Gravenhorst, 1829). Rare in Yorkshire.

* VC64: Greenland Wood, Copmanthorpe 3-10.6.2003 S.E.M.Fraser.

Endasys triannulatus Sawoniewicz & Luhman 1992. New to Yorkshire.

†VC62: Beast Cliff 6.9.1986 W.A.Ely.

Endasys varipes (Gravenhorst, 1829). Rare in Yorkshire.

*VC61: Park Wood, Ross Moor 5-12.8.2003 S.E.M.Fraser.

Additions and correction to Ely, 2016:

The VC63 record of ***Isadelphus inimicus*** (Gravenhorst, 1829) is an error.

*VC63: Holmehouse Wood, Keighley 5.6.1948 J.Wood.

Isadelphus coriarius (Taschenberg, 1865). New to Yorkshire.

*VC62: Coatham 7.8.2011 W.A.Ely.

†VC63: Digley 24.6.1985 D.Maude.

*VC65: Hutton Conyers 27.9.2011 C.H.Fletcher.

Gnotus chionops (Gravenhorst, 1829). Scarce in Yorkshire.

* VC61: Cali Heath YWT NR 1.6.2014 R.Crossley.

Gnotus macrurus (Thomson,1884). Rare in Yorkshire.

*VC63: Yorkshire Triangle, Crowle Moor, Thorne Moors NNR 10-24.10.1990 D.Heaver.

Subfamily **CRYPTINAE**

Additions to Ely, 2017*:*

Tribe ***Cryptini***

Agrothereutes abbreviatus (Fabricius, 1794). Scarce in Yorkshire.

*VC62: Fen Bog YWT NR 8.5.2015 R.Crossley.

Agrothereutes mandator (Linnaeus, 1758). Rare in Yorkshire.

*VC61: Hollow Swang, Skipwith Common NNR 18-26.8.2018 J.O.H.Small.

Thrybius brevispina (Thomson, 1896). New to Yorkshire.

†VC61: Hollow Swang, Skipwith Common NNR 18-26.8.2018 J.O.H.Small.

Ischnus inquisitorius (Müller, 1776). Uncommon in Yorkshire.

*VC62: Sq. Wood, Earswick Moor 22.9.1943 J.H.Elliott.

Nematopodius debilis (Ratzeburg, 1852). Rare in Yorkshire.

*VC61: Fox Covert, Escrick Park 8-15.7.2003 S.E.M.Fraser.

*VC62: Terrace Bank Wood spur, Duncombe Park 18-29.7.2019 J.O.H.Small.

Subfamily **BANCHINAE**

Additions to Ely, 2018a:

Glypta (Glypta) consimilis Holmgren, 1860. Rare in Yorkshire.

*VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.

Lissonota (Campocineta) palpalis Thomson, 1889. Scarce in Yorkshire.

*VC61: New Drive Plantation, Melbourne 8-15.7.2003 S.E.M.Fraser.

Subfamily **CTENOPELMATINAE**

Tribe ***Perilissini***

Additions to Ely, 2018c:

Sympherta foveolator (Holmgren, 1856). Rare in Yorkshire.

*VC63: Thorne Moors NNR canals 21.6-14.7.1987 W.A.Taylor.

Perilissus holmgreni Habermehl, 1925. Rare in Yorkshire.

*VC65: Nosterfield NR 1.7.2011 C.H.Fletcher.

Trematopygus ruficornis (Zetterstedt, 1838). Rare in Yorkshire.

*VC62: Caydale 24.6.1984 W.A.Ely.

Lathrolestes pleuralis (Thomson, 1883). New to Yorkshire.

†VC61: East Cottingwith Ings 9-29.6.2019 J.O.H.Small.

Lathrolestes saliceti (Roman, 1909). **New to Britain**.

†VC63: Yorkshire Triangle, Crowle Moors 29.8.1990 D.Heaver.

Priopoda apicaria (Geoffroy, 1785). New to Yorkshire.

†VC61: Revel Wood, Whiston 2.6.1988 W.A.Ely.

Saotis varicoxa (Thomson, 1893). Rare in Yorkshire.

*VC61: Cali Heath YWT NR 1.6.2014 R.Crossley.

Campodorus melanogaster (Holmgren, 1857). Rare in Yorkshire.

*VC61: Wilson's Plantation, Limefield Farm, Stamford Bridge 4-11.9.2003 S.E.M.Fraser.

Mesoleius aulicus (Gravenhorst, 1829). Rare in Yorkshire.

*VC63: Ecclesall Wood 1.8.1980 S.Watson.

Mesoleius furax Holmgren, 1857. Rare in Yorkshire.

*VC62: Haxby 12.7.2014 T.J.Crawford.

Mesoleius intermedius (Gravenhorst, 1829). New to Yorkshire.

†VC63: Carr Lodge 4.8.2019 A.R.Godfrey.

Pantorhaestes xanthostomus (Gravenhorst, 1829). Scarce in Yorkshire.

*VC64: Newton-in-Bowland 1.8.2011 W.A.Ely.

Hadrodactylus idari Kasparyan & Shaw, 2009. Scarce in Yorkshire.

*VC61: Allerthorpe Common 1.7.1984 W.A.Ely.

*VC62: Ravenscar, disused railway line 9.9.1989 W.A.Ely.

Phobetes femorator (Thomson, 1893). Rare in Yorkshire.

*VC64: Greenland Wood, Copmanthorpe 3-10.6.2003 S.E.M.Fraser.

Subfamily **CAMPOPLEGINAE**

Additions and corrections to Ely, 2019:

Casinaria albipalpis (Gravenhorst, 1829). Rare in Yorkshire.

*VC63: Lindrick GC 21.7.1986 S.J.Hayhow.

Campoletis rapax (Gravenhorst, 1829). Rare in Yorkshire.

*VC61: Allerthorpe Common 9.7.1932 J.Wood.

*VC62: Fen Bog YWT NR 25.7.2016 R.Crossley.

Dusona admontina (Speiser, 1908). New to Yorkshire.

†VC61: New Drive Plantation 8-15.7.2003 S.E.M.Fraser.

*VC62: Terrace Bank Wood, Duncombe Park 18-29.7.2019 J.O.H.Small.

Dusona bucculenta (Holmgren, 1860). New to Yorkshire.

†VC62: Coatham Dunes 29.7.2020 D.Whiteley.

Dusona leptogaster (Holmgren, 1860). The VC62 entry is an error, it is in VC61!

Dusona stragifex (Förster, 1868). Scarce in Yorkshire.

*VC61: New Drive Plantation, Melbourne 8-15.7.2003 S.E.M.Fraser .

Tranosemella praerogator (Linnaeus, 1858). Rare in Yorkshire.

*VC64: drain near Drax Abbey Farm 23.7.1987 W.A.Ely.

Cymodusa antennator Holmgren, 1860. Rare in Yorkshire.

*VC65: Reeth, banks of River Swale 14.8.2011 W.A.Ely.

Subfamily **TERSILOCHINAE**

Additions and correction to Ely, 2020:

Astrenis brunneofacies Vikberg, 2000. New to Yorkshire.

†VC64: Copmanthorpe Wood 29.7-13.8.2004 S.E.M.Fraser.

Astrenis paradoxus (Schmiedeknecht, 1907). Rare in Yorkshire.

*VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.

Pygmaeolus nitidus (Bridgman, 1889). The VC62 entry is an error, it is in VC61!

Tersilochus (Tersilochus) cognatus (Holmgren, 1860). Uncommon in Yorkshire.

*VC65: verge of B6255, Hawes 12.6.2013 W.A.Ely.

Subfamily **MESOCHORINAE**

Additions to Ely, 2020:

Cidaphus atricillus (Haliday, 1838). Scarce in Yorkshire.

*VC63: Lindholme Hall 27.9.2019 D.Williamson.

Astiphromma italicum Schwenke, 1999. Rare in Yorkshire.

*VC64: Greenland Wood 3-10.6.2003 S.E.M.Fraser.

Astiphromma varipes (Holmgren, 1860). Rare in Yorkshire.

†VC62: Beck Hole 5.7.1936 H.Britten jnr.

Mesochorus cimbicis Ratzeburg, 1844. Rare in Yorkshire.

†VC61: Skipwith 14.6.1951 J.H.Elliott.

Mesochorus fulgurans Curtis, 1833. Rare in Yorkshire.

Reported from VC62 by Walsh & Rimington (1956) p279.

*VC63: St Ives, Bingley 16.8.1947 J.Wood.

Mesochorus fuscicornis Brischke, 1880. Rare in Yorkshire.

*VC61: Allerthorpe 25.5.1952 J.H.Elliott.

†VC64: Askham Bog YWT NR 14.7.1950 J.H.Elliott.

Mesochorus gemellus Holmgren, 1860. Rare in Yorkshire.

†VC62: Malton Road, York 3.5.1944 J.H.Elliott.

Mesochorus giberius (Thunberg, 1824). Rare in Yorkshire.

Reported from VC62 by Walsh & Rimington (1956) p279.

Mesochorus globulator (Thunberg, 1824). Rare in Yorkshire.

†VC61: Allerthorpe 16.4.1951 J.H.Elliott.

Mesochorus pictilis Holmgren, 1860 Rare in Yorkshire.

*VC61: Shiptonthorpe 8.7.1951 J.H.Elliott.

*VC62: Strensall 16.7.1951 J.H.Elliott.

†VC64: Askham Bog YWT NR 16.7.1950 J.H.Elliott.

Mesochorus stigmator (Thunberg, 1824). Rare in Yorkshire.

†VC62: Stockton Hermitage 5.11.1951 J.H.Elliott.

Mesochorus temporalis Thomson, 1886. Rare in Yorkshire.
†VC61: Allerthorpe Common 16.7.1950 J.H.Elliott.
Mesochorus testaceus Gravenhorst, 1829. Rare in Yorkshire.
†VC62: Malton Road, York 24.5.1952 J.H.Elliott.
Mesochorus vitticollis Holmgren, 1860. Rare in Yorkshire.
*VC62: Sand Hutton 1.6.1951 J.H.Elliott.

Subfamily **METOPIINAE**

Correction to Ely, 2020:
Exochus lictor Haliday, 1839
The VC61 record from Wheldrake Ings is an error.
*VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.

The following ichneumons were historically included in two subfamilies, the Oxytorinae and the Orthocentrinae. The former was a dumping ground for ichneumons which did not fit anywhere else and it has now been split into several small subfamilies while the majority of species have been transferred into an enlarged Orthocentrinae, which is characterised by its host range, as all these ichneumons parasitise the larvae of fungus gnats.

Subfamily **OXYTORINAE**

Oxytorus armatus Thomson, 1883. Rare in Yorkshire.
Recorded from VC63 by Hincks (1949) p33.
*VC62: Ellerburn Bank YWT NR 4-8.7.2011 P.J.Mayhew.
Oxytorus luridator (Gravenhorst, 1820). Frequent in Yorkshire.
Recorded from VC61 in Ely (2013d) p234 and from VC63 by Hincks (1949) p33.
*VC62: Ellerburn Bank YWT NR 4-8.7.2010 + 4-8.7.2011 P.J.Mayhew.
*VC64: Knaresborough Ringing Station 1.8.1972 unknown.
*VC65: High Batts NR 26.6.2003 J.Jobe.

The YNU records of Oxytorinae have been compiled as follows:

Decade	Species	Records	Records/ Species	Collectors
1920-1929	1	1	1	1
1940-1949	2	3	1.5	1
1970-1979	2	4	2	3
1980-1989	2	11	5.5	3
1990-1999	1	4	4	1
2000-2009	1	15	15	3
2010-2019	2	37	18.5	13

Subfamily **CYLLOCERIINAE**

Cylloceria caligata (Gravenhorst, 1829). Uncommon in Yorkshire.
Unconfirmed report from VC62 in Walsh & Rimington (1956) p277. Recorded from VC64 by Ely (2011a) p215.
*VC61: Allerthorpe Common 5.8.1989 W.A.Ely.
*VC62: Hovingham 3.8.1935 J.Wood (det. J.F.Perkins).
*VC63: Crimsworth Dene 10.8.1935 J.Wood (det. J.F.Perkins).
*VC65: Birk Gill, Colsterdale 31.8.1980 W.A.Ely.

Cylloceria melancholica (Gravenhorst, 1820). Scarce in Yorkshire.
Unconfirmed report from VC63 in Carr (1914) p94. Recorded from VC61 by Ely (2014c) p237 and from VC64 by Ely (2013c) p227.

*VC62: Haxby 16.5.1943 J.H.Elliott.
*VC63: Keighley 10.8.1918 R.Butterfield.

Cylloceria sylvestris (Gravenhorst, 1829). New to Yorkshire.

†VC61: Hollow Swang, Skipwith Common NNR 20-23.5.2018 J.O.H.Small.

Allomacrus arcticus (Holmgren, 1880). Rare in Yorkshire.

*VC61: Cali Heath YWT NR 8.5.2016 R.Crossley.
†VC63: Brockadale YWT NR 24.7.1982 W.A.Ely (det. M.R.Shaw).
*VC64: Near Wood, Askham Bog YWT NR 30.5.2015 R.Crossley.
*VC65: R. Swale at Downholme 25.7.1987 W.A.Ely.

Hyperacmus crassicornis (Gravenhorst, 1829). Rare in Yorkshire.
Recorded from VC63 by Ely (2014d) p45.

The YNU records of Cyllocerinae have been compiled as follows:

Decade	Species	Records	Records/ Species	Collectors
1910-1919	1	2	2	2
1920-1929	2	2	1	2
1930-1939	2	3	1.5	1
1940-1949	2	6	3	2
1970-1979	1	1	1	1
1980-1989	3	12	4	4
1990-1999	1	1	1	1
2000-2009	2	6	3	2
2010-2019	5	22	4.5	5

Subfamily **MICROLEPTINAE**

Microleptes aquisgranensis (Förster, 1871). Rare in Yorkshire.

*VC63: Turnerwood 25.7.2002 W.A.Ely.
†VC65: Downholme quarry 25.7.1987 W.A.Ely.

Microleptes rectangulus (Thomson, 1888). Scarce in Yorkshire.
Recorded from VC65 by Ely (2011b) p222.

*VC61: Jeffry Bog YWT NR E of boundary drain 16.7.2016 R.Crossley.
*VC62: Haxby 3.6.2018 T.J.Crawford.
*VC63: Pot Riding Wood, Sprotborough Flash YWT NR 23 + 25.8.1988 W.A.Ely.
*VC64: Copmanthorpe Wood 8-15.7.2003 S.E.M.Fraser.

Microleptes splendidulus Gravenhorst, 1829). Rare in Yorkshire.

†VC63: Holmehouse Wood 29.9.1935 J.Wood.
*VC65: Semerwater YWT NR 20.8.1988 W.A.Ely.

The YNU records of Microleptinae have been compiled as follows:

Decade	Species	Records	Records/ Species	Collectors
1930-1939	1	1	1	1
1980-1989	3	4	1.3	1

2000-2009	2	3	1.5	2
2010-2019	3	16	5.3	9

Subfamily **ORTHOCENTRINAE**

Proclitus attentus Förster, 1871. Rare in Yorkshire.

†VC64: Hollins Hill, Baildon 19-22.10.2016 H.N.Whiteley.

Proclitus comes (Haliday, 1839). Rare in Yorkshire.

Recorded from VC63 by Ely (2014d) p45.

Proclitus fulvicornis Förster, 1871. Rare in Yorkshire.

*VC62: Dalby Forest 3.7.2015 R.Crossley.

*VC63: Old Spring Wood 16.7.2000 W.A.Ely.

*VC64: Hollins Hill, Baildon 16-23.6 + 28-31.10.2015 + 5-8.10 + 8-14.11.2016 H.N.Whiteley.

†VC65: River Tees, Winston 4.10.1985 W.A.Ely.

Proclitus paganus (Haliday, 1838). Scarce in Yorkshire.

*VC61: Spurn Point YWT NR 10.10.1982 W.A.Ely.

*VC62: Little Leake 9.10.2011 W.A.Ely.

*VC63: Morthen Brook marsh 4.10.1978 M.Crittenden,D.W.Twigg.

†VC64: Sunnydale 14.9.1949 J.Wood.

*VC65: Freeholders' Wood, Aysgarth 15.6.1985 W.A.Ely.

Proclitus praetor (Haliday, 1839). Scarce in Yorkshire.

*VC61: Wigman Wood, Wheldrake + Wilson's Plantation, Stamford Bridge 4-11.9.2003 S.E.M.Fraser.

*VC62: Ellerburn Bank YWT NR 4-8.7.2010 P.J.Mayhew.

†VC63: Moses Seat Wood, Lindrick 30.6.1979 W.A.Ely.

*VC64: Hollins Hill, Baildon 7.2013 + 28.10.2016 H.N.Whiteley.

*VC65: Downholme quarry 25.7.1987 W.A.Ely.

Proclitus socius (Haliday, 1839).

Unconfirmed report from VC61 in Fordham (1919) p70.

Dialipsis exilis Förster,1871. Rare in Yorkshire.

Recorded from VC64 by Ely (2011a) p215.

*VC63: Listerdale 26.9.1983 W.A.Ely.

Plectiscidea (Fugatrix) communis (Förster, 1871). Scarce in Yorkshire.

*VC61: Fox Covert, Escrick Park 4-11.9.2003 S.E.M.Fraser,

*VC62: Thornton Lane, Garbutt's Ghyl 2.9.2011 W.A.Ely.

*VC63: Harthill Upper Reservoir 7.9.2011 W.A.Ely.

†VC64: Malham Tarn NT 27.7.1956 W.D.Hincks (det. J.F.Perkins).

*VC65: River Rawthey, Sedburgh 29.9.2012 W.A.Ely.

Plectiscidea (Plectiscidea) canaliculata (Förster, 1871). Scarce in Yorkshire.

Recorded from VC61 by Ely (2013d) p234.

*VC62: Stell Bank Plantation, Little Leake 9.10.2011 W.A.Ely.

*VC64: Thornton in Lonsdale 7.10.2012 W.A.Ely.

*VC65: Oxnop Gill 5.10.1985 I.F.G.McLean.

Plectiscidea (Plectiscidea) collaris (Gravenhorst, 1829). Uncommon in Yorkshire.

*VC61: Grimston Wood, Dunnington Common 4-11.9.2003 S.E.M.Fraser.

*VC62: Flamingoland 27.9.2014 W.A.Ely.

†VC63: North Walk, Sandbeck Park 15.8.1982 W.A.Ely.

*VC64: Ellington Banks 2.9.1989 W.A.Ely..

*VC65: Barney Beck, Healaugh 3.10.1985 W.A.Ely.

Plectiscidea (Plectiscidea) melanocera (Förster, 1871). Rare in Yorkshire.

*VC63: Barnby Dun station wood 2.10.1978 P.Skidmore.

†VC64: Malham Tarn NT 23.7.1956 + 26.7.1959 W.D.Hincks.

*VC65: Freeholders' Wood 15.6.1985 W.A.Ely.

Plectiscidea (Plectiscidea) moerens (Förster, 1871). Rare in Yorkshire.

*VC63: Sinking Wood, Huddersfield 18.6.1985 D.Maude.

†VC64: Goldsborough Moor 16.5.1982 W.A.Ely.

*VC65: Freeholders' Wood 11.6.2017 C.H.Fletcher.

Plectiscidea (Plectiscidea) terebrator (Förster, 1871). Rare in Yorkshire.

†VC64: Malham Tarn NT 22.7.1959 W.D.Hincks.

Gnathochorisis crassula (Thomson, 1888). Rare in Yorkshire.

*VC61: Bracepits Wood, Melbourne Hall 8-15.7.2003 S.E.M.Fraser.

*VC63: Pot Riding Wood, Sprotborough Flash YWT NR 24.8.1989 W.A.Ely.

†VC65: Witton 8.6.1964 [E.Broadhead may have been the collector].

Gnathochorisis dentifer (Thomson, 1888). Rare in Yorkshire.

†VC64: Grass Wood YWT NR 3.9.1988 W.A.Ely.

Aperileptus albipalpus (Gravenhorst, 1829). Scarce in Yorkshire.

Recorded from VC64 by Ely (2011a) p215.

*VC61: Allerthorpe Common 30.6.1984 W.A.Ely.

*VC62: Scar Wood Woodland Trust NR 7.9.1986 W.A.Ely.

*VC63: Holmehouse Wood 7.6.1947 J.Wood.

Aperileptus impurus Förster, 1871. Rare in Yorkshire.

*VC61: North Cliffe Wood YWT NR 21.4.2015 R.Crossley.

†VC64: Malham Tarn NT 23.7.1959 W.D.Hincks.

*VC65: Oxnop Gill 5.10.1985 I.F.G.McLean.

Aperileptus infuscatus Förster, 1871. Rare in Yorkshire.

Recorded from VC62 by Ely (2014b) p222.

*VC63: Dinnington Marsh 9.8.2002 W.A.Ely.

*VC64: Hollins Hill, Baildon 21.8 + 18-21.10.2015 H.N.Whiteley.

*VC65: Crackpot 6.10.1985 W.A.Ely.

Aperileptus microspilus Förster, 1871. Rare in Yorkshire.

†VC61: Rush Wood, Birkhill Farm, Naburn 10-17.6.2003 S.E.M.Fraser.

*VC62: Cass Plantation, Huby 2.9.2011 W.A.Ely.

*VC63: Rockcliffe Road, Rawmarsh 30.4.2014 C.L.Leonard.

*VC64: Hollins Hill, Baildon 18-21.10.2015 + 27 + 28.10.2016 H.N.Whiteley.

Aperileptus vanus Förster, 1871. Scarce in Yorkshire.

*VC61: Cali Heath YWT NR 5.2012 R.Crossley.

*VC63: Sandbeck Park 13.10.1991 W.A.Ely.

†VC64: Stub Wood, Acaster Malbis 1.6.1985 W.A.Ely.

*VC65: Rake Beck Wood 4.10.1985 I.F.G.McLean.

Pantisarthrus lubricus (Förster, 1871). Scarce in Yorkshire.

*VC61: Harrop's Plantation, Escrick Park 5-12.8.2003 S.E.M.Fraser.

*VC62: Staindale + Dovedale 23.8.1987 W.A.Ely.

*VC63: Elland Park Wood 22.9.1985 W.A.Ely.

*VC64: Magdalen Wood 2.10.1985 I.F.G.McLean.

†VC65: Freeholders' Wood 15.6.1985 W.A.Ely.

Pantisarthrus luridus Förster, 1871. Rare in Yorkshire.

*VC62: Deepdale Wood, Loftus 15.9.2012 W.A.Ely.

*VC64: Swinsty Moor Plantation 17.9.2011 W.A.Ely.
†VC65: Freeholders' Wood 15.6.1985 W.A.Ely.

Entypoma robustator Aubert, 1968. Rare in Yorkshire.
Recorded from VC63 by Ely (2014d) p45.

Entypoma robustum Förster, 1871. Rare in Yorkshire.
Recorded from VC63 by Ely (2014d) p45.

Entypoma suspiciosum (Förster, 1871). Scarce in Yorkshire.
*VC61: Jeffry Bog Plantation 16.7.2016 R.Crossley.
†VC62: Ashberry Pastures YWT NR 8.6.1980 W.A.Ely.
*VC63: Brecks Plantation, Listerdale 7.10.1984 W.A.Ely.
*VC64: Hetchell Wood YWT NR 11.6.1988 W.A.Ely.

Megastylus cruentator Schiødte, 1838. Scarce in Yorkshire.
Unconfirmed report from VC62 in Roebuck (1907) p215.
*VC61: Jeffry Bog Plantation 14.5.2014 R.Crossley.
†VC63: Burley-in-Whafedale 7.1905 P.H.Grimshaw (det. G.R.Broad).
*VC64: Ellington Banks 17.8.2012 C.H.Fletcher.

Megastylus excubitor (Förster, 1871). Rare in Yorkshire.
†VC62: Harland Moor 18.8.2012 W.A.Ely (tG.R.Broad).

Megastylus flavopictus (Gravenhorst, 1829). Scarce in Yorkshire.
†VC61: Rush Wood, Naburn 13-20.5 + 10-17.6 + 8-15.7 + 4-11 + 11-19.9.2003 S.E.M.Fraser.
*VC62: Flamingoland 27.9.2014 W.A.Ely.
*VC63: Low Laithes, Todwick 21.8.2005 W.A.Ely.
*VC64: Copmanthorpe Wood 1-8.7.2003 S.E.M.Fraser.
*VC65: Lamb Close Hag, Marrick Park 29.6.2015 W.A.Ely.

Megastylus impressor Schiødte, 1838. Scarce in Yorkshire.
Recorded from VC64 by Ely (2015c) p234.
*VC61: Allerthorpe 25.5.1952 J.H.Elliott.
*VC62: Malton Road crossing 24.5.1952 J.H.Elliott.
*VC63: Drop Clough 5.1989 D.Maude.

Megastylus orbitator Schiødte, 1838. Uncommon in Yorkshire.
*VC61: Skipwith Common YWT NR 13.8.1988 W.A.Ely (det. G.R.Broad).
*VC62: Ellerburn Bank YWT NR 4-8.7.2011 P.J.Mayhew.
†VC63: Howell Wood 10.6.1975 P.Skidmore.
*VC64: Hellwath 2.6.1990 W.A.Ely.
*VC65: Hutton Conyers 31.8.2011 C.H.Fletcher.

Megastylus pectoralis (Förster, 1871). Rare in Yorkshire.
†VC61: Wigman Wood, Wheldrake 4-11.9.2003 S.E.M.Fraser.
*VC64: Breary Marsh 29.9.2011 C.Wing.

Megastylus suecicus Rossem,1983. Rare in Yorkshire.
†VC61: Rush Wood, Naburn 10-17.6.2003 S.E.M.Fraser.
*VC64: Crow Tree Close, Baildon 9.6.2011 D.Parkinson (tG.R.Broad).

Helictes borealis (Holmgren, 1857). Uncommon in Yorkshire.
*VC61: Skipwith Common YWT NR 14.9.1980 W.A.Ely.
*VC62: Ravenscar 9.9.1989 W.A.Ely.
†VC63: Marley 16.6.1925 J.Wood.
*VC64: Askham Bog YWT NR 27.7.1931 J.Wood.
*VC65: Witton 21.6.1964 [E.Broadhead].

Helictes erythrostoma (Gmelin, 1790). Frequent in Yorkshire.

Recorded from VC61 by Crossley (2011) p207 and from VC63 by Ely (2013b) p223.

*VC62: Bank Top Farm, Northallerton 9.6.2011 W.A.Ely,M.McKerchar.

*VC64: Malham Tarn NT Fen 22.7.1984 W.A.Ely.

*VC65: Witton 14.8.1963 [E.Broadhead].

Symplecis bicingulata (Gravenhorst, 1829). Rare in Yorkshire.

Recorded from VC63 by Ely (2014d) p45.

*VC61: Rush Wood, Naburn 10-17.6.2003 S.E.M.Fraser.

*VC62: Dalby Forest 3.7.2015 R.Crossley.

*VC64: Greenland Wood, Copmanthorpe 4-11.9.2003 S.E.M.Fraser.

Symplecis breviuscula Roman, 1923. Rare in Yorkshire.

†VC61: Park Wood, Ross Moor 5-12.8.2003 S.E.M.Fraser.

*VC63: Smithy Wood, Thorpe Hesley 21.5.2016 R.Wilson.

Symplecis leucostoma (Förster, 1871). Rare in Yorkshire.

†VC64: Greenland Wood, Copmanthorpe 4-11.9.2003 S.E.M.Fraser (det. G.R.Broad).

Eusterinx (Divinatrix) inaequalis Rossem, 1981. Rare in Yorkshire.

*VC61: Bridlington Road, Flamborough 20.7.2013 W.A.Ely.

†VC64: Hollins Hill, Baildon 6.2013 + 6-8.9.2015 + 17-25.8.2016 + 17-20.8.2017 H.N.Whiteley.

Eusterinx (Holomeristus) tenuicincta (Förster, 1871). Rare in Yorkshire.

†VC63: Footbridge Wood, Roche Abbey 8.6.2002 W.A.Ely.

Eusterinx (Eusterinx) argutula Förster, 1871. Rare in Yorkshire.

†VC64: Malham Tarn 27-31.5.1955 R.B.Benson (det. J.F.Perkins)

Orthocentrus ambiguus Holmgren, 1858. **New to Britain.**

†VC63: Crowle Moors 24.10.1990 D.Heaver.

Orthocentrus asper (Gravenhorst, 1829). Uncommon in Yorkshire.

†VC61: Allerthorpe 11.5.1952 J.H.Elliott.

*VC62: Castlebeck Wood Woodland Trust NR 7.9.1986 W.A.Ely.

*VC63: Barnby Dunn Station Wood 2.10.1978 P.Skidmore.

*VC64: wood between Redhouse Lane & Sharp Hill Lane, Drax 21.7.1987 W.A.Ely.

*VC65: Ellington Firth 28.9.1964 [E.Broadhead].

Orthocentrus attenuatus Holmgren, 1858. Rare in Yorkshire.

†VC63: Holmehouse Wood 11.11.1939 J.Wood.

Orthocentrus frontator (Zetterstedt, 1838). Rare in Yorkshire.

†VC62: Ashberry Pastures YWT NR 15.6.1977 P.Skidmore.

*VC63: Yorkshire Triangle Crowle Moor, Thorne Moors NNR 10-24.10.1990 D.Heaver.

*VC64: Hollins Hill, Baildon 6.2013 + 22-27.10.2015 H.N.Whiteley.

*VC65: Tullis Cote 7.5.1989 W.A.Ely.

Orthocentrus fulvipes Gravenhorst, 1829. Rare in Yorkshire.

Recorded from VC65 by Newbould, J.A., Norris, A. & Ely, W.A. (2013) p57.

*VC62: Woodside 2.9.2011 W.A.Ely.

*VC63: Hoober 8.6.1978 W.A.Ely.

Orthocentrus monilicornis Holmgren,1858. Scarce in Yorkshire.

Recorded from VC64 by Ely (2012) p224.

*VC61: Allerthorpe 15.7.1951 J.H.Elliott.

*VC63: Loxley 5.7.1986 W.A.Ely.

*VC65: Langton Wood, Northallerton 9.6.2011 W.A.Ely,M.McKerchar.

Orthocentrus patulus Holmgren,1858. Rare in Yorkshire.

*VC61: Rush Wood, Naburn 11-18.9.2003 S.E.M.Fraser.

†VC63: Hail Mary Wood, Treeton Dyke 4.10.1980 W.A.Ely.

Orthocentrus petiolaris Thomson, 1897. Rare in Yorkshire.

†VC63: Pot Riding Wood, Sprotborough Flash YWT NR 18.7.1989 W.A.Ely.

Orthocentrus radialis Thomson, 1897. Scarce in Yorkshire.

*VC61: Bracepits Wood, Melbourne Hall 8-15.7.2003 S.E.M.Fraser.

†VC62: Goathland 22.7.1979 W.A.Ely.

*VC63: Langold Holt 8.10.1988 W.A.Ely.

*VC64: Gisburn 29.8.2011 W.A.Ely.

*VC65: Gill Wood 4.10.1985 W.A.Ely.

Orthocentrus sannio Holmgren, 1858. Rare in Yorkshire.

Recorded from VC63 by Ely (2014d) p45.

Orthocentrus spurius Gravenhorst, 1829. Scarce in Yorkshire.

Recorded from VC62 by Ely (2014b) p222.

*VC61: Wilson's Plantation, Stamford Bridge 10-17.6.2003 S.E.M.Fraser.

*VC63: Listerdale Woods 30.6.1991 W.A.Ely.

*VC64: Hetchell Wood YWT NR 11.6.1988 W.A.Ely.

Orthocentrus winnertzii Förster, 1850. Scarce in Yorkshire.

*VC61: Naburn Wood, Naburn 1-8.7 + 4-11.9.2003 S.E.M.Fraser.

*VC63: Don Canal, Holmes 7.8.1987 W.A.Ely.

†VC64: Stub Wood, Alcaster Malbis 1.6.1985 W.A.Ely.

*VC65: River Dee, Dentdale 29.9.2012 W.A.Ely.

Picrostigeus debilis (Gravenhorst, 1829). Rare in Yorkshire.

Recorded from VC63 by Ely (2014d) p45.

*VC61: Rush Wood, Naburn 10-17.6.2003 S.E.M.Fraser.

Picrostigeus obscurus Horstmann, 1994. Scarce in Yorkshire.

*VC61: Rush Wood, Naburn 13-20.5.2003 S.E.M.Fraser.

*VC62: Folly Wood, Huby 9.10.2011 W.A.Ely.

†VC63: Burghwallis 13.7.1976 P.Skidmore.

*VC64: Primrose Valley, Halton, Leeds 27.5.2013 W.A.Ely.

*VC65: Moorcock, Garsdale 5.7.2013 W.A.Ely.

Picrostigeus recticauda (Thomson, 1897). Common in Yorkshire.

Recorded from VC62 by Morley (1911) p64.

*VC61: Buttercrambe Woods 10.5.1944 J.H.Elliott.

*VC63: Cusworth Park 3.5 + 21 + 29.7.1975 P.Skidmore.

*VC64: Becca Banks 26.5.1984 W.A.Ely.

*VC65: Leyburn Shawl 2.10.1985 W.A.Ely.

Picrostigeus setiger (Brischke, 1871). Scarce in Yorkshire.

*VC61: Bracepits Wood, Melbourne Hall 8-15.7 + 4-11.9.2003 S.E.M.Fraser.

*VC62: Scar Wood Woodland Trust NR 7.9.1986 W.A.Ely.

†VC63: King's Wood, Roche Abbey 1.8.1982 W.A.Ely.

Batakomacrus caudatus (Holmgren, 1858). Uncommon in Yorkshire.

*VC61: Rush Wood + Naburn Wood 1-8.7.2003 S.E.M.Fraser.

*VC62: Catto Farm 29.6.2011 W.A.Ely.

†VC63: Holmehouse Wood 26.10.1941 J.Wood .

*VC64: Copmanthorpe Wood 4-11.9.2003 S.E.M.Fraser.

Stenomacrus binotatus (Holmgren, 1858).

Recorded from VC61in Hincks (1953) p136.

Stenomacrus carbonariae Roman, 1939. Uncommon in Yorkshire.

*VC61: Many Gates Plantation + Wilson's Plantation, Stamford Bridge 4-11 + 11-18.9.2003 S.E.M.Fraser.

*VC62: Thornton Lane at Garbutt's Ghyl 2.9.2011 W.A.Ely.
†VC63: Broom Valley, Rotherham 7.1983 W.A.Ely.
*VC64: Copmanthorpe Wood 8-15.7 + 4-11.9.2003 S.E.M.Fraser.
*VC65: Millthrop, Sedburgh 29.9.2012 W.A.Ely.

Stenomacrus cognatus (Holmgren, 1858).
Recorded from VC61 and VC63 in Hincks (1953) p136.

Stenomacrus curvicaudatus (Brischke, 1871). Rare in Yorkshire.
*VC61: Pocklington Canal, Melbourne 15.5.2010 W.A.Ely.
†VC63: Brockadale YWT NR 10.5.1980 W.A.Ely.
*VC64: St Chad's, Meanwood 4.5.2011 W.A.Ely.
*VC65: Beverley Wood, Northallerton 29.6.2011 W.A.Ely.

Stenomacrus deletus (Thomson, 1897). Uncommon in Yorkshire.
*VC61: Rush Wood, Naburn 15-22.4 + 13-20.5 + 10-17.6 + 4-11 + 11-18.9.2003 S.E.M.Fraser.
*VC62: Duncombe Park 10.6.1980 P.Skidmore.
†VC63: Bolton Wood 5.6.1937 J.Wood.
*VC64: Copmanthorpe Wood 1-8.7 + 4-11.9.2003 S.E.M.Fraser.

Stenomacrus holmgreni (Kirchner, 1867). Rare in Yorkshire.
*VC63: Whitgift 7.1976 A.Grieve (W.A.Ely).
*VC64: Ramsgill + Scar House Reservoir, Nidderdale 31.5.2014 W.A.Ely.
†VC65: Low Row, Swaledale 13.8.2011 W.A.Ely.

Stenomacrus laricis (Haliday, 1839). Scarce in Yorkshire.
*VC62: Stockton Hermitage 23.6.1950 + 13.10.1951 J.H.Elliott.
†VC63: GG 12.10.1939 J.Wood.
*VC64: Wharfe Wood 21.6.1978 W.A.Ely.
*VC65: Colsterdale 7.7.1984 W.A.Ely.

Stenomacrus ungula Thomson, 1897. **New to the UK.**
†VC64: Newton-in-Bowland 1.8.2011 W.A.Ely.
*VC65: Cloggerby Rigg between Cliff Gate Road & Thwaite Bridge, Swaledale 3.7.2013 W.A.Ely.

Stenomacrus vafer (Holmgren, 1858). Rare in Yorkshire.
†VC63: Bassingthorpe Spring, Kimberworth Park 25.7.2001 W.A.Ely.
*VC64: Horton-in-Ribblesdale 21.9.2014 W.A.Ely.

Plectiscus agilis (Holmgren, 1858). Rare in Yorkshire.
Recorded from VC63 by Ely (2014d) p45.

Plectiscus impurator Gravenhorst, 1829. Uncommon in Yorkshire.
*VC61: Harrop's Plantation + Hacking Wood + Fox Covert, Escrick Park 4-11.9.2003 S.E.M.Fraser.
*VC62: Bridestones Griff NT NR 23.8.1987 W.A.Ely.
*VC63: Hail Mary Wood, Treeton Dyke 4.10.1980 W.A.Ely.
†VC64: Malham Tarn NT 22.7.1959 W.D.Hincks.
*VC65: River Rawthey + Millthrop + River Dee, Sedburgh 29.9.2012 W.A.Ely.

Plectiscus ridibundus (Gravenhorst, 1829). Scarce in Yorkshire.
VC62: Kildale Station 27.10.2014 W.A.Ely.
†VC63: Holmehouse Wood 30.5.1935 J.Wood.
*VC64: Ash Wood, Drax 27.7.1987 W.A.Ely.
*VC65: Foxglove Covert NR 14.7.2017 C.H.Fletcher.

Neurateles falcatus (Thomson, 1897). Scarce in Yorkshire.
*VC61: Rush Wood, Naburn 10-17.6.2003 S.E.M.Fraser.

*VC62: Hell Bank Wood, Appleton Mill 25.5.1985 W.A.Ely.
†VC63: Chesterfield Canal 31.5.1981 W.A.Ely.
*VC64: Hetchell Wood YWT NR 11.6.1988 W.A.Ely.
*VC65: Langton Wood 9.6.2011 W.A.Ely,M.McKerchar.

The YNU records of Orthocentrinae have been compiled as follows:

Decade	Species	Records	Records/ Species	Collectors
1860-1869	1	1	1	1
1890-1899	2	2	1	1
1900-1909	1	1	1	1
1910-1919	2	3	1.5	1
1920-1929	1	1	1	1
1930-1939	8	10	1.25	2
1940-1949	5	5	1	2
1950-1959	14	20	1.5	4
1960-1969	4	4	1	1
1970-1979	15	24	1.6	4
1980-1989	46	210	4.7	6
1990-1999	17	22	1.3	4
2000-2009	44	250	5.4	2
2010-2019	55	382	7	25

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YNU Librarian

After ten years of sterling service, for which we are very grateful, Chris Young has resigned as YNU librarian and we are looking for a replacement. The library is hosted by the North & East Yorkshire Ecological Data Centre at 10a Minster Gates, York. It contains mainly journals, magazines and books, although there are some old maps, survey reports and planning documents. Access is by appointment with the NEYEDC.

The role is not an arduous one and would ideally suit someone living in the York area. Please contact the Chairman for further details if you are interested.

Going for a walk in the countryside – the aculeate wasps and bees of Sand Hutton

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Introduction

While I was carrying out my social wasp research around the village of Sand Hutton (SE6958) I also studied the solitary wasps and bees including the social bees. The walk consisted of two parts: through the village and along an adjacent farming path. In the village, of particular interest were the grassy flowery verges, hedges, flowery gardens, a deep drainage ditch with deciduous trees and a church with a crumbling monument and flowery areas. The farming path was surrounded by deep drainage ditches, usually with water, hedges with flowers and leading to deciduous and coniferous woodland with fishing ponds. Some decaying trees and small sandy banks were found. The fields of the farms were mainly arable and of little interest. Thus the area around the walk had a heterogeneous variety of habitats with resources needed by the aculeates, mainly food, particularly pollen for bees and prey for wasps, nectar and aerial and subterranean nesting sites in open, sunny and sheltered sites. The objectives of this paper, besides giving an account of the aculeate wasps and bees, aim to explain why so many species were found.

Methods

During the research period I spent long hours on 3-4 days of the week with the consequence that an unusually large number of samples were taken during 49 days. Visits were from April until September from 1967 until 2015. Since the main purpose was the study of the social wasps no attempt was made to make a complete record of other aculeates.

Results

I recorded 79 species and with the five additions recorded by J.H. Elliott during 1943 (specimens in York Museum), and D.H. Smith during 1949 (specimens seen), it gives a total of 84 species (Table 1; full species list in the Appendix). This total would indicate, in a Yorkshire context, a very good site which seems very unlikely as it would be on a par with Duncombe Park, Burton Leonard Quarry and Skipwith Common!

The number of new species recorded between 1965 and 2015 varied according to recorder effort, as might be expected. After the first year when 17 species were recorded, there was an average of 6.2 new species recorded per year, with numbers varying from 1 to 12.

Over half (52%) of the solitary species were only recorded once. Most records were made at flowers as nesting sites were rarely recorded. The main exceptions were the aerial nesting solitary wasps *Trypoxylon clavicerum*, *Ectemnius cavifrons* and *Pemphredon lugubris* nesting in dead wood sites. *Vespa crabro* was also found nesting in a dead wood hollow.

Most recorded species are common and widespread in Yorkshire, although *Ectemnius lapidarius* has only been recorded since 2000. Three rarities were recorded: *Crossocerus distinguendus* and *Andrena tibialis,* each known by eleven records on the Yorkshire database; *C. distinguendus*

has been recorded from all Yorkshire vice counties except VC65 while *A. tibialis* is usually only recorded in southern Yorkshire. The third rarity was *Passaloecus eremita* which is the only record for Yorkshire and is usually associated with southern England with a few scattered records from the Midlands.

Table 1. The number of aculeate species per family or subfamily recorded by Archer and Archer and others.

	Archer	Archer, Elliot & Smith
Chrysididae	2	2
Mutillidae	1	1
Pompilidae	1	3
Eumeninae	3	3
Crabronidae	24	25
Total Solitary Wasps	**31**	**34**
Colletidae	1	1
Andrenidae	12	13
Halictidae	7	7
Megachilidae	4	5
Solitary Apidae	7	7
Total Solitary Bees	31	33
Total Solitary Species	**62**	**67**
Vespinae	6	6
Social Apidae	11	11
Total Social Species	17	17
Total Wasps and Bees	**79**	**84**

Questions arising from these results are why were so many species recorded, including some rarities like *P. eremita*, north of its known English range, and *C. distinguendus* on the northern border of its Yorkshire range, and why so many common and widespread solitary species were only recorded once?

Table 2 shows that the Parasitic Loads for the solitary wasps and bees are similar to other Yorkshire sites while Table 3, p230 shows that, although the Aerial Nester Frequency is similar to the British average for the solitary bees, it is higher for the solitary wasps.

Table 2. The relative frequency of the parasitic (cleptoparasites & parasitoids) species among the solitary species recorded from Sand Hutton.

	Parasites (P)	Non-parasites (NP)	Parasite Load PL = 100 x P/(C + NP)	Range of values in Yorkshire
Solitary Wasps	3	31	8.8%	10.3-25.0%
Solitary Bees	8	25	24.2%	25.0%-40.0%

Table 3. The nesting habits of the solitary species recorded from Sand Hutton

	Aerial nesters (A)	Subterranean nesters (S)	Aerial nester frequency AF = 100 x A/(A + S)	British Average
Solitary Wasps	20	11	64.5%	48.2%
Solitary Bees	5	20	18.8%	18.8%

Discussion

Since most of the recorded species are common and widespread, this would increase the chances of them being recorded because so many samples were taken over so many years. In addition the walk is surrounded by the heterogeneous resources needed by aculeates.

The higher Aerial Nester Frequency for the solitary wasps was due to the presence of decaying wood which is less frequently found on other sites.

Appendix – Records of M.E. Archer with additions by J.T. Elliott & D.H. Smith

Chrysididae
Chrysis angustula Schenck
C. ignita (Linnaeus)

Mutillidae
Myrmosa atra Panzer

Pompilidae
Anoplius viaticus (Linnaeus) Elliott
Dipogon subintermedius (Magretti)
Priocnemis perturbator (Harris) Elliott

Eumeninae
Ancistrocerus trifasciatus (Müller)
Symmorphus bifasciatus (Linnaeus)
S. gracilis (Brullé)

Vespinae
Dolichovespula saxonica (Fabricius)
D. sylvestris (Scopoli)
Vespa crabro Linnaeus
Vespula germanica (Fabricius)
V. rufa (Linnaeus)
V. vulgaris (Linnaeus)

Crabronidae
Argogorytes mystaceus (Linnaeus) Smith
Crabro cribrarius (Linnaeus)
Crossocerus annulipes (Lepeletier & Brullé)
C. binotatus (Lepeletier & Brullé)
C. distinguendus (Morawitz)
C. elongatulus (Van der Linden)
C. megacephalus (Rossi)
C. ovalis (Lepeletier & Brullé)
C. podagricus (Van der Linden)
C. pusillus (Lepeletier & Brullé)
C. quadrimaculatus (Fabricius)
Ectemnius cavifrons (Thomson)
E. cephalotes (Olivier)
E. continuus (Fabricius)
E. lapidarius (Panzer)
Mimesa equestris (Fabricius)
Mellinus arvensis (Linnaeus)
Psenulus concolor (Dahlbom)
P. pallipes (Panzer)
Pemphredon inornata Say
P. lugubris (Fabricius)
Passaloecus corniger Shuckard
P. eremita Kohl
P. insignis (Van der Linden)
Trypoxylon clavicerum Lepeletier & Seville

Colletidae
Hylaeus communis Nylander

Andrenidae
Andrena bicolor Fabricius Elliott
A. chrysosceles (Kirby)
A. clarkella (Kirby)
A. fucata Smith
A. fulva (Müller *in* Allioni)
A. haemorrhoa (Fabricius)
A. lapponica Zetterstedt
A. nigroaenea (Kirby)
A. semilaevis Pérez
A. scotica Perkins
A. subopaca Nylander
A. tarsata Nylander
A. tibialis (Kirby)

Halictidae
Halictus rubicundus (Christ)
Lasioglossum albipes (Fabricius)
L. calceatum (Scopoli)
L. leucopus (Kirby)
L. rufitarse (Zetterstedt)
L. villosulum (Kirby)
Sphecodes geoffrellus (Kirby)

Megachilidae
Osmia bicornis (Linnaeus)
O. leaiana (Kirby)
Megachile circumcincta (Kirby) Elliott
M. versicolor Smith
M. willughbiella (Kirby)

Solitary Apidae
Nomada fabriciana (Linnaeus)
N. flava Panzer
N. goodeniana (Kirby)
N. leucophthalma (Kirby)
N. marshamella (Kirby)
N. panzeri Lepeletier
N ruficornis (Linnaeus)

Social Apidae
Bombus hortorum (Linnaeus)
B. lapidarius (Linnaeus)
B. lucorum s.l. (Linnaeus)
B. pascuorum (Scopoli)
B. pratorum (Scopoli)
B. terrestris (Linnaeus)
B. barbutellus (Kirby)
B. bohemicus (Seidl)
B. sylvestris (Lepeletier)
B. vestalis (Geoffroy *in* Fourcroy)
Apis mellifera Linnaeus

Field Note: A fly new to Yorkshire during the lockdown period

Andrew Grayson
'Scardale', High Lane, Beadlam, Nawton, York, North Yorkshire, YO62 7SX

In March 2020, with the looming prospect that much of my commercial invertebrate work faced cancellation or postponement due to an imminent Covid-19 lockdown, I was mindful that some spare study time may become available as the year progressed; and in anticipation of this, I collected a few flies in my father's house and from local woodlands. This produced an addition to the Yorkshire Diptera list, viz. *Hydrophoria diabata* (Pandellé, 1899), of which I found a couple of males in Riccal Dale (SE6320884378) on 6th May. This uncommon fly is very similar to the common *H. lancifer* (Harris, [1780]), but has distinctive genitalia. When lockdown restrictions were unexpectedly relaxed before the end of May, my normal busy workload resumed; inevitably, but somewhat regrettably, causing the cessation of my local recording activities.

Field Note: New species from our Covid walks

Joyce & Paul Simmons paul@gentian.plus.com

Whilst walking this spring and summer in our local area, which includes part of the Magnesian Limestone ridge, Joyce and I have been lucky enough to find several species of interest. We discovered new places to walk and one of these was a lane running due south along the limestone. In the hedge beside the lane we found a Barberry *Berberis vulgaris,* a survivor of the time when farmers removed the bush from hedgerows because it is an intermediate host for stem rust of wheat *Puccinia graminis*. Sprays are now used to control that fungus, so the Barberry escapes extermination. Another plant of note which grows well in such limestone lanes, Field Garlic *Allium oleraceum,* was growing beside the track just below the Barberry.

Further along the lane a farmer's track turns right into the fields. In April Joyce noticed a plant there which she had not seen before. When a leaf was crushed, it had a very familiar smell of cat-mint. It was not the mauve-flowered sprawling plant of gardens but had an upright growth habit. Further visits as the white flowers opened confirmed it as the Wild Cat-mint *Nepeta cataria* (Fig. 1).

Figure 1. Wild Cat-mint *Nepeta cataria*

We did not appreciate the importance of the find until we had a conversation with Don Grant, who was VC63 botanical recorder for many years. He was excited by the find, saying that Cat-mint had disappeared in recent years from its few known sites in Yorkshire. In fact, he declared it 'plant find of the year'. There are 5 large specimens and seed has been collected in the hope of restoring this handsome plant to some of its former sites.

Our next find was during the 'lockdown' in June, whilst walking in the Brockadale Nature Reserve. The reserve had become a very popular site for people doing their lockdown exercise, and up to 80 cars had been counted along the approach lane only a couple of weeks before. Most of the visitors will have walked down a diagonal path across a south-facing limestone slope. It was there that we saw small holes with mounds of freshly-moved soil along the side of the path. We stopped and saw black and yellow insects flying low over the holes and then disappearing into them, and later emerging. It was clear that we were looking at either a mining bee or wasp. I was able to take photographs over the next few days that allowed us to identify the insect and to see some of its behaviour more clearly.

The insects proved to be Ornate-tailed Digger-wasps *Cerceris rybyensis*. Looking carefully at the photographs we were able to see that at least some of the wasps were carrying small bees into their burrow (Fig.2). This prey item had been stung and was being taken to feed the developing wasp larvae in their nest chambers underground. We found over 30 holes along a 200 metre length of the path.

Figure 2. Ornate-tailed Digger-wasp *Cerceris rybyensis* with prey

Figure 3. Ivy Bee *Colletes hederae* Photos: Paul Simmons

Several weeks later, in mid October, we were on the same path in Brockadale NR when Joyce spotted newly dug holes in almost the same area as the digger-wasp holes. We soon realised that there were some large bees flying low over the grass. They were at least as big as honeybees, but not quite the same. Reference to Falk, 2015, confirmed these as Ivy Bees *Colletes hederae* (Fig.3), one of the few bees to be flying at this time of the year. Over 50 holes were counted, but there were probably many more. Neither the digger-wasp nor the bee were firsts for the county, but both have only appeared in Yorkshire recently, moving north in response to climate change. The Cat-mint has been here longer. We were pleased, however, to find them all on 'our patch'.

Reference

Falk, S, (2015), *Field Guide to the Bees of Great Britain and Ireland.* Bloomsbury.

Field Note: Some interesting insects recorded during 'lockdown' from a Barnsley garden

J. D. Coldwell 16 Railway Cottages, Dodworth, Barnsley

From late March 2020 I resolved to record insects from my garden during the 'lockdown' period. However, the results were so interesting that I regularly monitored the site – solely by sweep netting – until the end of September.

The garden is fairly small and comprises an occasionally-mowed lawn, a mix of garden and wild flowers and shrubs including *Buddleja, Ceanothus* and *Cotoneaster*. At the end of the

garden running parallel with the six dwellings that comprise Railway Cottages is a line of tall, mature hawthorns with much Ivy intermingled. A large Lawson's Cypress tree dominates the southern end of the row next to which is a disused railway signal box thick with Ivy. The whole garden area is sheltered and relatively undisturbed and would seem to have characteristics of woodland edge on the basis of many of the insects recorded.

Diptera by far dominated the proceedings with 220 species recorded. Certain ones were abundant at times, such as *Lonchoptera lutea*, *Opomyza germinationis* and *Meiosimyza decempunctata,* whilst other less generally encountered flies proved to be surprisingly frequent here, namely *Bicellaria nigrita*, *Platypalpus incertus*, *Pachygaster atra*, *P. leachii*, *Trixoscelis frontalis, T. similis*, *Tricimba lineella*, *Philygria stictica* and *Homoneura tesquae*. There were a significant number of flies that turned up once or twice in the garden that I have rarely or never found in the wider countryside. These included *Leia bimaculata*, *Bicellaria nigra*, *Euthyneura halidayi*, *Rhamphomyia gibba*, *Paraplatypeza atra, Heleomyza captiosa*, *Neottiphilum praeustum*, *Cnemanthe muscaria*, *Homoneura interstincta*, *Camilla nigrifrons, Philygria interstincta*, *Tricogena rubricosa*, *Oebalia minuta*, *Pegomya caesia* and *Lophosceles cinereiventris*.

Five diptera found in 2020 proved to be new to Yorkshire. These are *Mycomya flavicollis*, *Trixoscelis canescens*, *Rhingia rostrata* and *Chyromya femorellum*. The taxonomic status of the last mentioned is unclear.

Few coleoptera were encountered but the distinctive *Neocoenorrhinus aequatus* could be frequently swept from hawthorn in spring as could *Pachyrhinus lethierryi* from Lawson's Cypress. This weevil was first recorded in the UK in 2003 but seems to be rapidly spreading, especially in gardens containing evergreens of the Cypress fir family.

Hemiptera were generally scarce apart from *Anthocoris nemorum,* which was common throughout. The scarce mirid bug *Dichrooscytus gustavi* could be easily swept from Lawson's Cypress, although this is an insect usually associated with Juniper. The scarce lacebug *Derephysia foliacea* was swept on one occasion off Ivy. Of the Auchenorryncha, *Zyginella pulchra* was a surprising find in early spring whilst the uncommon *Lamprotettix nitidulus* was evident on a number of occasions in late July.

There were two outstanding discoveries amongst the otherwise unremarkable aculeate hymenoptera. A single example of the minute sphecid wasp *Spilomena troglodytes* made an appearance in June, the first Barnsley record, to be followed by a single *Crossocerus distinguendus*, a scarce but increasing wasp, again new to the district.

Few lepidoptera were recorded as no light trap was employed, the most noteworthy being the uncommon micromoth *Argyresthia cupressella*, an adventive species which has recently expanded its range on ornamental conifers.

Two further insects, the wax fly *Coniopteryx esbenpeterseni* and the rare Pallopterid fly *Palloptera anderssoni* may also have occurred in the garden but despite both being males I found the evidence inconclusive and they await expert examination.

In Memoriam: Joyce Payne née Sykes (12th January 1923 – 29th August 2020)

Catherine M. Caudwell (Joyce's daughter, c.m.caudwell@fireflyuk.net) writes:

Joyce was born into a family of tenant farmers at North Milford Hall, near Tadcaster, where she spent her years as an infant and, for most of her 97 years, lived within twelve miles or so of her birthplace. For a period during the late 1920s/early 1930s her family moved to a hill farm at Timble in the Washburn valley, west of Otley. She seems to have loved her childhood there but because of the remote location, from about 1934, went to Mill Mount school in York, staying with her father's sister (Lily Sykes) in Copmanthorpe. When war broke out, Joyce went on to Teacher Training at Bingley. She taught at several Primary Schools in the Tadcaster/York area and later in life her enthusiasm for wildlife led her to run a "Watch" group for children in Cawood.

Figure 1: Joyce Payne skating on Askham Bog, a short cycle ride from home, in the 1940s.

It was in York during the war that she met our father Kenneth through their shared interest in Natural History and the York and District Field Naturalists' Society (YDFNS) ('In memoria' of Kenneth, which also mention Joyce, are in *YNU Bulletin* 54 (2010): 8-10). For the rest of their active lives they recorded (and sometimes organised) many YNU excursions. Her lifelong enthusiasm for Lepidoptera and knowledge of sites, particularly where she had recorded species in the past, was quite phenomenal. Joyce was remembered in the YNU for her major participation in the management committee of Askham Bog (Figure 1) and would have been happy to know that it was recently saved from adjacent development. Joyce and Kenneth had many weekend expeditions to all parts of Yorkshire, including weekends away with the Fungi Section looking for rusts, Joyce being very good at spotting them and Kenneth at identification. Over the years they developed many contacts in the YNU including John and Tim Flint and their family, the Lloyd-Evans's, Roy and Jean Crossley, Eva Crackles, Miss Robb, and Dr Sledge.

Joyce was already collecting butterflies when she first visited Kenneth's parents in Surrey before their marriage and was delighted to collect there a new species, the Adonis Blue. Unfortunately,

leaving the set specimen in their conservatory overnight resulted in it being eaten by a mouse! She continued collecting up until the 1970s, after which she ceased and became active in Butterfly Conservation (BC). She and Kenneth moth-trapped at Colton and then Cawood where they ran a bucket trap with tungsten bulb, in the garage. Joyce's collection of Lepidoptera still survives in good condition. After John, my brother, and I left home our parents moved from Colton to Cawood. They visited sites like Bishop Wood, Skipwith Common and the Selby Canal regularly and enjoyed contributing to the new botanical atlas of the British Isles.

After Kenneth died Joyce took great interest in the Church, the Cawood Garth Group and the management of her field, Keesbury Close, a scheduled site which was conservation-grazed by sheep, courtesy of Karen McDiarmid of the YWT. Joyce had also purchased a strip of Ryther Ings, and she gained great pleasure from recording butterflies and moths for BC at the Close and annually monitoring of the Snake's-head Fritillary on the Ings.

Both Joyce and Kenneth were honoured to be made life members of the YNU, the certificate displayed prominently on the piano in their sitting room. More recently she was surprised to receive a special invitation to a reception marking the 70th anniversary of the YWT at which David Attenborough was the guest of honour. She was worried about going but Karen McDiarmid gave her a lift. "I don't know why they asked me" she said, "It must be because I'm old"!

Joyce enjoyed her independence and, when well into her 90s, was sad to give up her car. She also struggled with her hearing but battled on at home in Cawood, until, having become very frail, during lockdown, she went to live at Westwood Care Home in Selby. There she was able to keep in touch with her family by phone until, having avoided Covid-19, she died peacefully in her sleep as a result of age and frailty. Up to 30 people, wearing masks, were permitted at the funeral service in Cawood, including several members of the YNU. Joyce was buried in Ryther churchyard close to the graves of her parents and where Kenneth can also be commemorated.

Colin Howes (colinhowes@blueyonder.co.uk) writes:
Considering her long and dependable devotion to YNU affairs, my own contribution to Joyce's memory is unworthily thin. At the time of S.M. Jackson's (Jacko's) funeral, Joyce helped Doncaster Museum acquire his Lepidoptera collection and associated paperwork. Later, when preparing a historical review of the RDB Biodiversity Action Plan moth Scarce Vapourer *Orgyia recens* in Yorkshire and adjacent counties (*The Naturalist* 125 (2000): 121-135), Joyce was able to provide detailed location information about sites in the Selby region from the 1930s to 50s. The resulting historical distribution map showed the decline of sites within the Humberhead region and was exhibited as part of a poster display at the YNU Conference on *The Biodiversity of the Humberhead Levels* (*Supplement to YNU Bulletin* 45 (2006): 112-116).

In July 1998, while members of the YNU Flowering Plant section were examining a population of Green-flowered Helleborine *Epipactis phyllanthes* around the lower lake at Cusworth Park, Doncaster, Joyce discovered an additional colony in a Grey Poplar *Populus x canescens* woodland on the north bank of the park's middle lake (*The Naturalist* 140 (2015): 48-56). In 2004, as a local resident and YNU representative, Joyce played her part in the Action Plan Steering group for the Selby Biodiversity Action Plan (AP), along with Dr. David Chesmore (York University) and Sean Clough (Butterfly Conservation), providing information on some 24 species of rare moths within the Selby district. She also contributed to the AP sections on Lowland wood pasture and

parkland, and Towns and Villages.

Her devotion to Lepidoptera was delightfully reflected in her wardrobe, attending YNU meetings in a tea-dance frock, the fabric appropriately decorated with a blizzard of butterflies.

Alastair Fitter (alastairfitter@btinternet.com) writes:
I moved to York in 1972 and was quickly invited by Clifford Smith, Secretary of the Yorkshire Naturalists' Trust (now YWT), to visit Askham Bog, a site he knew well. There was, of course, a hidden agenda: Nancy Day wanted to step down as chair of the reserve management committee and he wanted me to take on the role. Joyce was invariably helpful in telling me about the site and its problems, being a real enthusiast for the place. I learned much from her and always enjoyed talking to her about wildlife and the Yorkshire folk who studied it, who she knew well, and would describe with a wonderful chuckle.

Audrey Gramshaw (audrey@gramshaw.net) writes:
Joyce and Kenneth came to many YNU Spring and Autumn fungus Foray weekends where Joyce developed an unofficial role as organiser of welcome refreshments when the party returned to the workroom after foraying. These workrooms varied from Hebden village hall, with shortage of power points, to the splendid lab at Sedbergh School. Joyce was always at the centre of the arrangements and created a warm, friendly atmosphere, which made the forays the most memorable and enjoyable of YNU Field meetings.

Terry Crawford (terryjcrawford@btinternet.com) writes:
The second sentence of the Preface to *Butterflies and Moths of Yorkshire* (Sutton & Beaumont, 1989) reads "The project was conceived by the Lepidoptera Study Group which first met, through the efforts of Joyce Payne, in October 1985." That tribute to Joyce deserves further thoughts on her contribution to "the project" itself and also, following publication of the book, to keeping the momentum going that has led to today's vibrant study, recording and monitoring of Yorkshire's Lepidoptera.

On 10 November 1985 Joyce assembled nine lepidopterists to join Ken and herself at their Colton home for a 4 hour meeting which resulted in the formation of the informal Lepidoptera Study Group, its main aim being to update the 1967 list of Yorkshire Lepidoptera and publish by November 1987. Joyce agreed to be "convenor/minute secretary", although her role was far more like general secretary. The project grew in scope, as did the number of people involved as Joyce built contacts and organized two further annual meetings at Bolton Percy Parish Room. The Paynes moved to Cawood and the November 1988 meeting, at Cawood Methodist Room, was preceded by a sherry reception at their home. The last stages of the project were in-hand, a publication date in August 1989 agreed, and it really was "all hands to the pump"! Joyce was active in helping co-ordinate efforts, and I well remember her delivering to me for my comments a massive copy of the mainframe computer output of the draft species list, already heavily annotated by Philip Winter. At that 1988 meeting the Group decided they would like to continue meeting annually, and Joyce readily took hold of that responsibility. She also became the leading "sales person" once the book was published, travelling widely to persuade garden centres and other potential outlets to take copies for display; and at any YNU or other meeting she would have boxes of the book to sell, or for others to take and sell on her behalf.

Through the 1990s the Group flourished, holding its annual meetings in the Biology Department Library, University of York. I hosted and chaired those meetings, but Joyce really organized them and took minutes, and I want to record my gratitude to Joyce for all the ways in which she helped me. We forget how much more difficult it was then, without today's computing technology, to convene meetings, maintain contact with a 50-strong membership, process records and produce reports. Also, the November meetings had clashed with some YNU meetings, much to Joyce's dismay as she had responsibilities in both directions. We moved our meetings to early Spring, and Joyce proposed that the Lepidoptera Study Group should become the Lepidoptera Group as part of the YNU Entomological Section, which would not prevent non-YNU members attending. That was strangely contentious with no immediate agreement being reached but, eventually, as recorded in the 1995 Minutes, Joyce said that "she was unwilling to convene the Group any longer" unless the change was made. That did the trick!

Joyce managed the affairs of the YNU Lepidoptera Group until the end of the 1990s, and continued to attend meetings for much of the following decade. The Group's ongoing very successful joint recording activities with the Yorkshire Branch of Butterfly Conservation and the production of an annual butterfly and moth report are in no small measure thanks to Joyce's sustained support during the early years.

I would like to finish on a more personal memory. A few years ago I was getting anxious about the decline in the Dark Bordered Beauty moth at Strensall Common. Roy Crossley sent me a copy of a rather ancient typescript of extracts from the York and District Field Naturalists' Society's records showing wide fluctuations in the moth's fortunes from 1894 to 1978, an attempt, I think, to allay my fears. Fortunately, Joyce had added her signature and date 28 Feb. 1983 at the bottom of the last page, nearly lost in the photocopy. I rang Joyce to tell her that I had this, and we had a long chat that included a most endearing tale. She said that when young, she was driven by some male friends to Strensall Common at night to look for Dark Bordered Beauty in the car's headlights. Her description located the site as by the small railway crossing at SE647614. She said it was during World War II. That might be a bit inaccurate as I doubt you could have got away with showing lights like that near to a major military site during the War. Never mind! The key aspect that excited Joyce so enthusiastically was that she had defied the social conventions of the time, and as a young woman had gone on a night-time journey with young men and without a chaperone. That is my special and enduring memory of Joyce.

Peter Mayhew (peter.mayhew@york.ac.uk) writes:

I met Joyce only once, on 11th Sept 2018, less than two years before she passed away. I had developed an interest in the history of the Dark Bordered Beauty moth at Strensall and had been encouraged to talk to Joyce by Terry Crawford. He possessed a copy of a 1983 manuscript typed by Joyce, containing all YDFNS record book references to the moth. Joyce was the last Lepidoptera recorder for that society, which disbanded in 2002. I wrote to her and to my surprise she invited me to visit her at Cawood, which I did. During that visit I was delighted that Joyce consented to co-author an article detailing the records she had identified, which was published the next year (*The Naturalist* 144 (2019): 104-115); after all she had done most of the work 35 years before! Joyce was clearly pleased to have a fellow lepidopterist 'captive' for a while, albeit one only half her age. She had prepared for my arrival, using notes on the back of an envelope to jog her memory of past events. In a far-ranging and enjoyable conversation,

I eventually steered her to her experiences of Dark Bordered Beauty.

She told me the following story: When she met Kenneth in her twenties (before they were engaged) she wasn't used to mixing with the opposite sex at all. She had been to an all girls' school, an all girl's college, and, since she was always told not to tell her mother anything (for fear of getting into trouble), was mainly advised by her maiden aunts. During the war the blackout prevented moth trapping at night, but afterwards, with the lights back on, Kenneth invited her on the first post-war night expedition on Strensall Common. She realized that her aunt (Lily) would say "No, you can't go on that", so she didn't go and Kenneth, who was very upset, wrote to her telling her that she was an adult and had to stand up for herself. He went without her, and collected a single male Dark Bordered Beauty.

Joyce then shocked me by asking: "Would you like to see it?". Yes, indeed I would. She brought out a large wooden box packed with pinned and carefully set moth specimens, amongst which I recognized several of the superficially similar Bordered Beauty, before my eye rested on a single, slightly worn male Dark Bordered Beauty. I took a picture of the specimen and label, which read "Strensall 13.7.47." The specimen is also mentioned briefly in her 1983 manuscript: "1946 - K. G. Payne accompanied Arthur Smith on a sugaring expedition to the Towthorpe Lane site and brought one specimen 13/7". This presumably is also the observation referred to in the YDFNS Lepidoptera record book, in an entry against a numbered species list (made long after the event when Joyce took over as recorder): "1946 JP Strensall". The inconsistency between the stated years is puzzling. Despite date information on specimen labels often being treated as definitive, it seems likely that forty-six is the correct year (cf *The Naturalist* 144 (2019): 104-115) because Joyce and Kenneth were married in October 1947 and must have been engaged already in July of that year; 46 is also more consistent with the "lights on" element of the story.

When I said goodbye to Joyce on her doorstep, a late Holly Blue butterfly flew past in the sunshine, delighting us both. I was reminded of this moment exactly two years later, when I attended her funeral in Cawood, and noticed pictures of Holly Blue on the back of the Order of Service.

YNU Calendar 2021

Vice-county Excursions. The meeting time for all VC Excursions is 10.30am. For full details, please visit the YNU website, consult *The Naturalist* or contact the excursion organiser (see p.4 of Membership Card or YNU website for contact details).

May	15	YNU VC61 Excursion to Flamborough. Car park South Sea Road. TA230695.
June	13	YNU VC62 Excursion to Duncombe Park nr. Helmsley. SE612835.
July	3	YNU VC63 Excursion to Central Dearne Valley, Barnsley. Carpark at SE372064.
July	17	YNU VC64 Excursion to Askham Bog. Carpark on A1036. SE575479.
Aug	14	YNU VC65 Excursion to Cautley Spout & Cautley Home Beck. SD698969.

Evening Zoom Meetings			
Booking to attend these will be via the website and/or emails sent to members and representatives of affiliated societies. It is hoped to arrange further Zoom meetings later in the year and anyone interested in leading one should contact a member of the Executive. Sessions start at 7.30pm.			
Jan	14	Yorkshire's top ten grasses, and how to identify them using vegetative features	Judith Allinson
Feb	11	Movement north of the Brown Argus (*Aricia agestis*)	Martin Partridge
Mar	25	Nosterfield Nature Reserve	Simon Warwick
Apr	15	Lindholme and Hatfield Moors	Louise Hill

YNU Annual General Meeting

Saturday 9 October 2021 at St John's Methodist Church Hall, Settle BD24 9JH 1.30pm to 4.30pm. The AGM will be hosted by Craven Conservation Group and followed by a presidential address by Dr Judith Allinson.
It will be preceded in the morning by a programme of workshops and displays and the opportunity for a meeting of the Natural Sciences Forum.
For more information and booking visit www.ynu.org.uk/AGM

Entomological Section		
Cancelled		Recorders' Reports and Conversazione: Minutes/Reports to be circulated by email.
Mar	14	Lepidoptera Group Annual Meeting: Bramham Village Hall. TBC.
Oct	16	AGM at Potteric Carr NR Education Centre. 11.00am to 12.30pm; open to public exhibits 1.30pm to 4.30pm. TBC.
Botanical Section		
Jun	14	Farwath in Newtondale. VC62 Joint meeting with the North East Yorkshire BSBI Botany Group. Meet 10.30. For further details contact Wendy English (wendy.english@btopenworld.com).
Jun	20	Fishlake Green Lanes and Washlands. VC63 Meet 10.00, Blackshaw Lane, SE666157 just north of Fishlake Village. Contact Louise Hill (louise.a.hill@googlemail.com).
Jun	23	Eskeleth Beck and Fotheringholme SSSI. VC65. Arkengarthdale. NY999037. Contact Linda Robinson (lindarobinson157@btinternet.com).
Bryological Section		
May	8	Scoska Wood and Brown Scar, Littondale. VC 64 Meet at 10:00 in Arncliffe, near the Falcon Inn SD931718. Contact: Tom Blockeel (Tblockeel@aol.com).
Oct	2	Jugger Howe. VC 62. Meet at 10:00 am at Helwath Bridge SE954995. Contact: Tom Blockeel.
Executive		
Feb	10	Meeting via Zoom, 7.00pm to 9.00pm.
Sept	11	Meet in the Lounge at St Chad's Parish Centre, Leeds, 10.30am to 12.30pm. TBC.

Yorkshire Naturalists' Union

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The Naturalist

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Contributors should indicate whether they wish their manuscripts to be subjected to anonymous peer review. All other manuscripts will be reviewed by the Editorial Board who at their discretion may send them to third parties for comment and advice.

Original articles should be submitted electronically as an MS Word document to Dr A. Millard at:
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Please look at a recent issue of the journal for a general idea of how to present your article. Also see *The Naturalist* - *Guidance for authors* at www.ynu.org.uk/naturalist and please **avoid** the following:

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- using tabs to tabulate information (please use MS Word table format).
- inserting any figures, graphs or plates into the text; indicate their proposed locations in the text and send them as separate files.

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If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482).

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